



# 2005 ANNUAL REPORT

## Indiana Department of Transportation

### Toll Road District

September 2005

PREPARED BY:



**RQAW CORPORATION**  
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Director of Tolls

**INDIANA EAST-WEST TOLL ROAD  
2005**

**ANNUAL REPORT**

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**NEEDS STUDY REPORT  
FISCAL YEARS 2007 - 2016**

**PREPARED FOR:  
INDIANA DEPARTMENT OF TRANSPORTATION  
TOLL ROAD DISTRICT**

**PREPARED BY:**

**RQAW CORPORATION  
INDIANAPOLIS                  SOUTH BEND**

**SEPTEMBER, 2005**

**ISSUED: 9-28-05**

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## ACKNOWLEDGMENT

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**PART A**  
**EXECUTIVE SUMMARY**

## **SUMMARY**

The Executive Summary outlines the goals and performance indicators to be met for the Indiana Department of Transportation - Toll Road District's pavement condition, bridge condition, and maintenance operations.

The Toll Road District uses an Organizational Performance Index (OPI) to monitor progress in attaining the established goals in each of the performance areas. Each OPI measure highlighted in this section has a direct bearing on the Toll Road District's ability to achieve its overall performance goals.

The highway network for which the Toll Road District is responsible is a toll based interstate system that extends east and west along the northern portion of the State of Indiana. The Indiana Toll Road begins at the Indiana - Illinois Line at milepost 0 and ends at the Indiana - Ohio Line at milepost 156.73

## **Pavement Organizational Performance Index: (POPI)**

The pavement on the Indiana Toll Road is inspected annually and includes the following:

- **Mainline Pavement** - Defined as the entire pavement associated with the main driving lane, the passing, and the shoulders from MP 0 to MP 156.73.
- **Toll Plaza Ramp Pavement** - Defined as the pavement on both the entrance and exit ramps of the Toll Road.
- **Travel Plaza Parking Lot Pavement** - Defined as the entire pavement associated with the Travel Plaza primarily the parking lot but also the entrance and exit ramps for the Travel Plazas.

Since 1998, the Indiana Department of Transportation (INDOT) uses the Pavement Quality Index (PQI) as the primary method to rate pavement conditions for monitoring purposes.

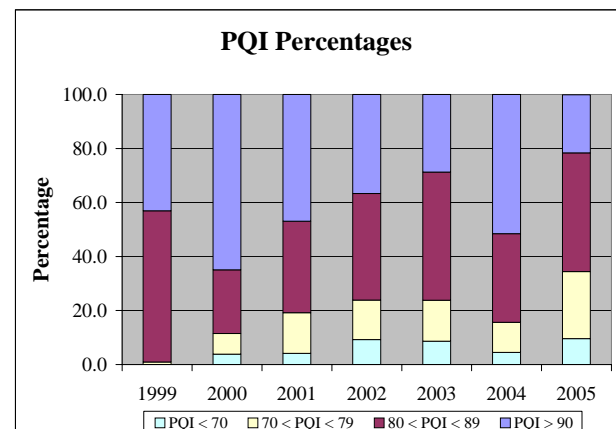
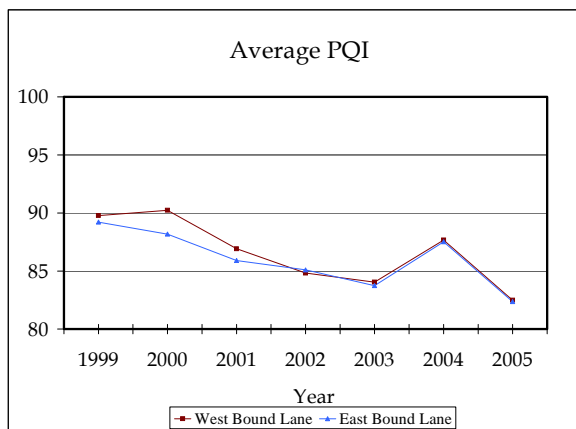
The PQI rating is from 0 to 100 with excellent pavements in the 90 to 100 range, good pavements in the 80 to 90 range, fair pavements in the 70 to 80 range, and poor pavements below 70. The Toll Road District's target PQI is 90.

The PQI rating is a calculated composite index of the following:

- **Pavement Condition Rating (PCR)** - A measurement of the distresses on a pavement surface. The rating varies between 0 to 100 with excellent pavements in the 90 to 100 range, good pavements in the 80 to 90 range, fair pavements in the 70 to 80 range, and poor pavements below 70. The Toll Road District considers the system's pavement is deficient when the PCR is below 65 points. The pavement of the system is evaluated annually using the PCR.
- **International Roughness Index (IRI)** - A measurement of the ride of the pavement. It measures the "bumpiness" of the pavement in terms of inches per mile, the higher the number the rougher the ride. The index is set-up such that excellent pavements are in the 60 to 100 range, good pavements are in the 100 to 150 range, fair pavements are in the 150 to 200 range, and poor pavements are over 200.
- **Rut** - A measurement of the average depth of ruts in the wheel paths of a pavement. Rutting is most common on bituminous pavements and a severely rutted pavement would have average ruts of 0.25" or larger. Generally, rutting does not occur on concrete pavement unless it is very old (in the range of 25-plus years).

## Indiana Toll Road District Information – Mainline Pavement Summary

Route System		
Mainline Pavement		
Eastbound	156.73	Lane Mile
Westbound	156.73	Lane Mile
Toll Plaza Ramps	42	Ramps
Travel Plaza Parking Lots	14	Lots



In general, the goals for the Toll Road and each of its maintenance districts will be the same as the statewide goals. In particular, for mainline pavement, the Toll Road goal will be to maintain an average PQI of 80 with no more than 10% of the lane miles in poor condition.

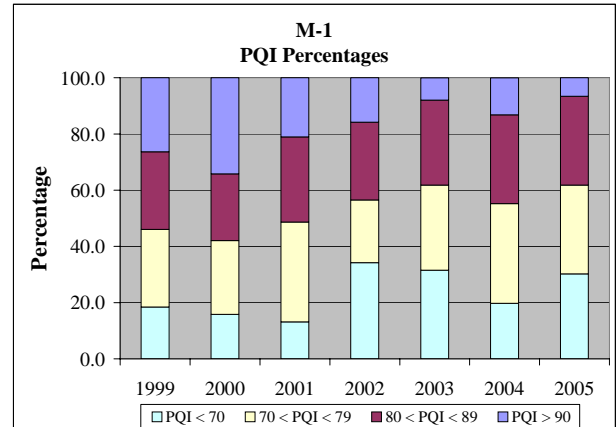
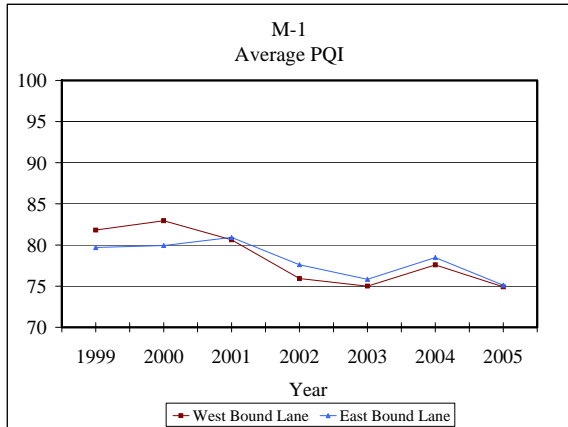
Indiana Toll Road District Pavement Conditions															
.		1999		2000		2001		2002		2003		2004		2005	
Route System	Rating	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi
Interstate	% Excellent	89	43	89	65	86	47	85	37	84	29	88	52	82	22
	% Good		56		24		34		40		48		33		44
	% Fair		1		8		15		15		15		11		25
	% Poor		0		4		4		9		9		5		10

Currently, the Toll Road is meeting its goal, though a review of the data shows that the PQI has declined while the percent of poor pavement has increased.



## Maintenance 1 – Pavement Information

Route System	M-1	
Mainline Pavement		
Eastbound	38	Lane Mile
Westbound	38	Lane Mile
Toll Plaza Ramps	19	Ramps
Travel Plaza Parking Lots	4	Lots



## Maintenance 1 Goal

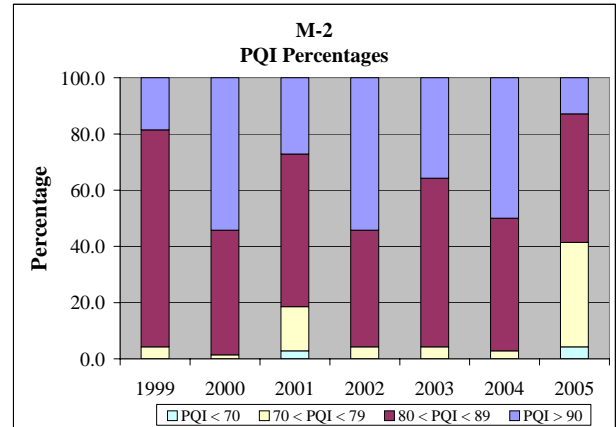
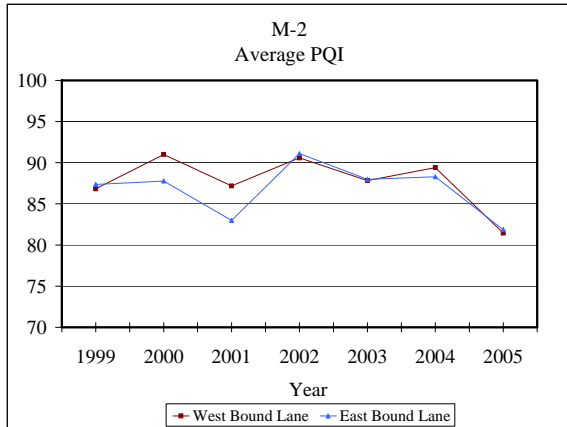
The following table shows the M-1 District historic trends.

M-1 District Pavement Conditions															
		1999		2000		2001		2002		2003		2004		2005	
Route System	Rating	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi
Interstate	% Excellent	81	26	81	34	81	21	77	16	75	8	78	13	75	7
	% Good		28		24		30		28		30		32		32
	% Fair		28		26		36		22		30		36		32
	% Poor		18		16		13		34		32		20		30

Currently, the M-1 District is below the average PQI goal for the district. Additionally, there is a need to decrease the percentage of poor pavement to achieve the 10% poor condition goal. The goal should be met over the next 5 years by decreasing the percentage of poor pavements by 5% annually.

## Maintenance 2 – Pavement Information

Route System	M-2	
Mainline Pavement		
Eastbound	35	Lane Mile
Westbound	35	Lane Mile
Toll Plaza Ramps	6	Ramps
Travel Plaza Parking Lots	2	Lots



## Maintenance 2 Goal

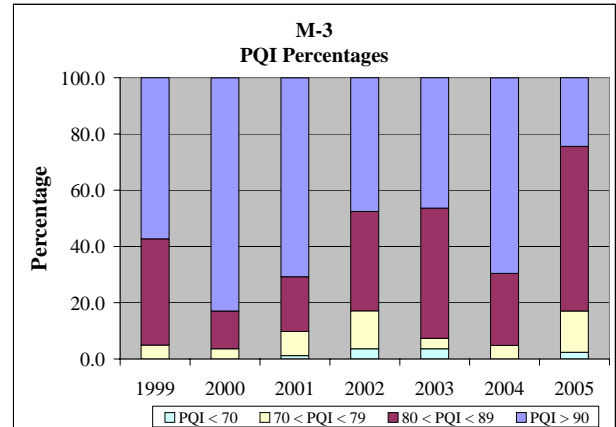
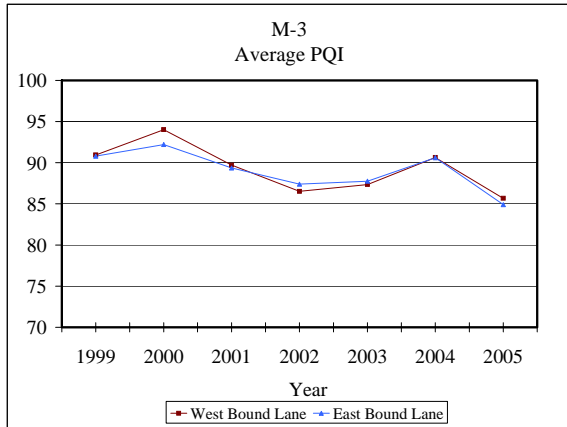
The following table shows the M-2 District historic trends.

M-2 District Pavement Conditions															
Route System	Rating	1999		2000		2001		2002		2003		2004		2005	
		Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi
Interstate	% Excellent	87	19	89	54	85	27	91	54	88	36	89	50	82	13
	% Good		77		44		54		41		60		47		46
	% Fair		4		1		16		4		4		3		37
	% Poor		0		0		3		0		0		0		4

Currently, the M-2 District is above the average PQI goal for the district. Additionally, it is below the percentage of poor pavement goal.

## Maintenance 3 – Pavement Information

Route System	M-3	
Mainline Pavement		
Eastbound	41	Lane Mile
Westbound	41	Lane Mile
Toll Plaza Ramps	12	Ramps
Travel Plaza Parking Lots	4	Lots



## Maintenance 3 Goal

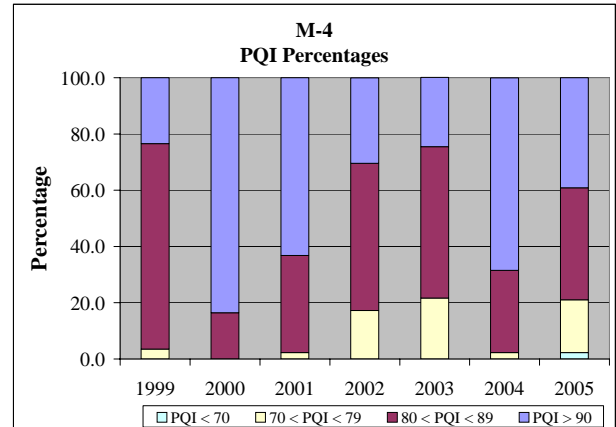
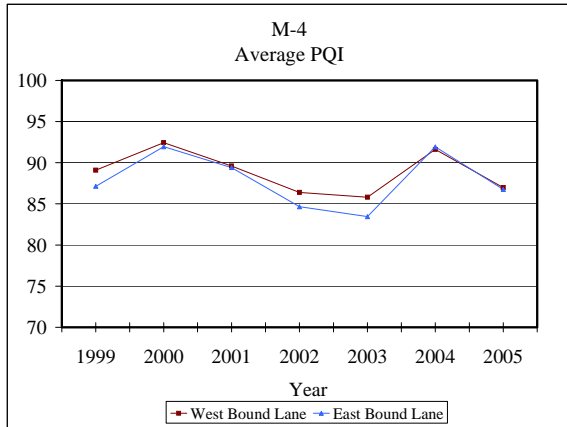
The following table shows the M-3 District historic trends.

M-3 District Pavement Conditions															
		1999		2000		2001		2002		2003		2004		2005	
Route System	Rating	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi
Interstate	% Excellent	91	57	93	83	90	71	87	48	88	46	91	70	85	24
	% Good		38		13		20		35		46		26		59
	% Fair		5		4		9		13		4		5		15
	% Poor		0		0		1		4		4		0		2

Currently, the M-3 District is above the average PQI goal for the district. Additionally, it is below the percentage of poor pavement goal.

## Maintenance 4 – Pavement Information

Route System	M-4	
Mainline Pavement		
Eastbound	42.73	Lane Mile
Westbound	42.73	Lane Mile
Toll Plaza Ramps	5	Ramps
Travel Plaza Parking Lots	4	Lots



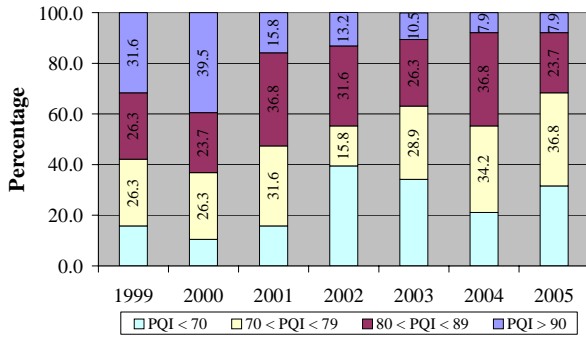
## Maintenance 4 Goal

The following table shows the M-4 District historic trends.

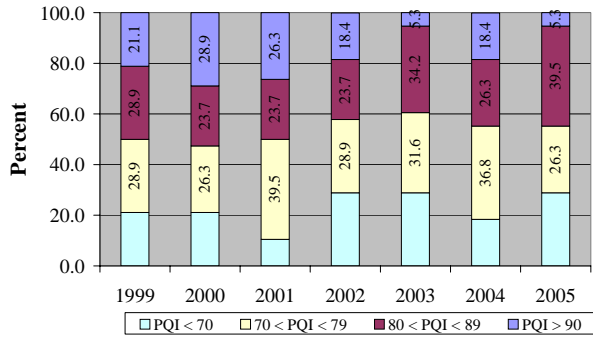
M-4 District Pavement Conditions															
Route System	Rating	1999		2000		2001		2002		2003		2004		2005	
		Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi	Avg PQI	%Ln Mi
Interstate	% Excellent	88	23	92	84	90	63	86	30	85	25	92	68	87	39
	% Good		73		16		35		52		54		29		40
	% Fair		4		0		2		17		22		2		19
	% Poor		0		0		0		0		0		0		2

Currently, the M-4 District is above the average PQI goal for the district. Additionally, it is below the percentage of poor pavement goal.

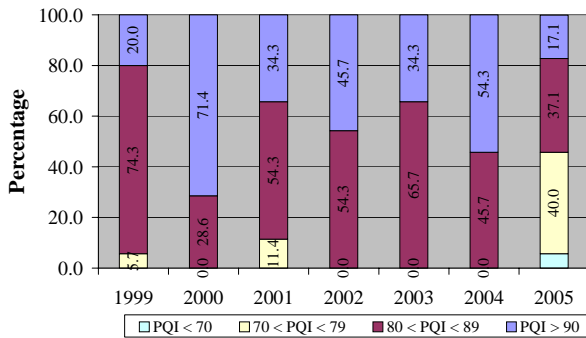
**M-1  
West Bound PQI Percentages**



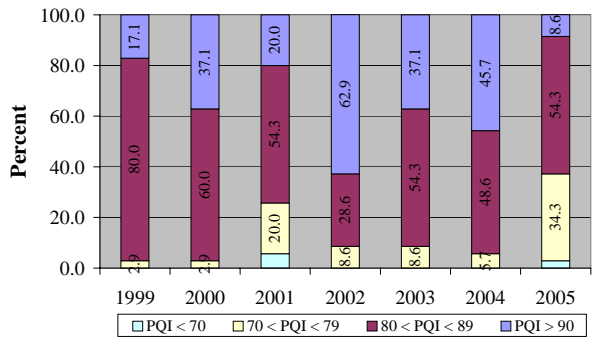
**M-1  
East Bound PQI Percentages**



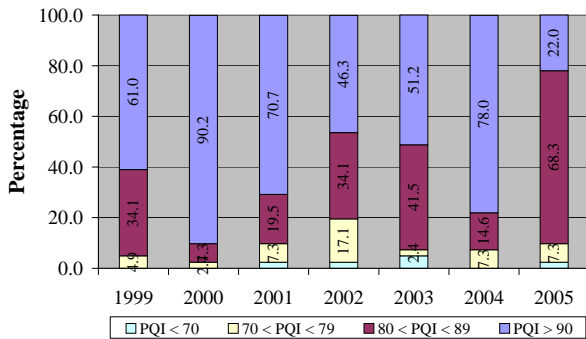
**M-2  
West Bound PQI Percentages**



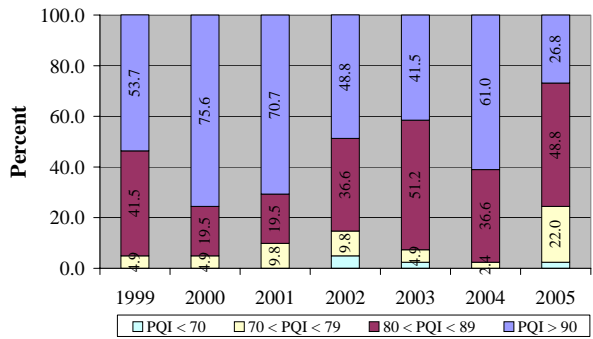
**M-2  
East Bound PQI Percentages**



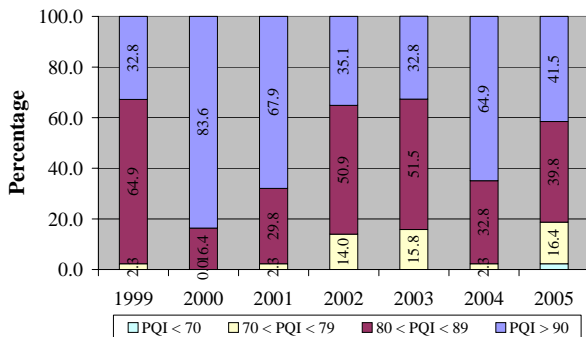
**M-3  
West Bound PQI Percentages**



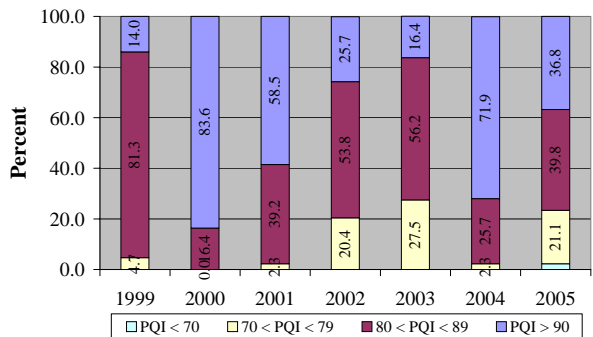
**M-3  
East Bound PQI Percentages**



**M-4  
West Bound PQI Percentages**



**M-4  
East Bound PQI Percentages**

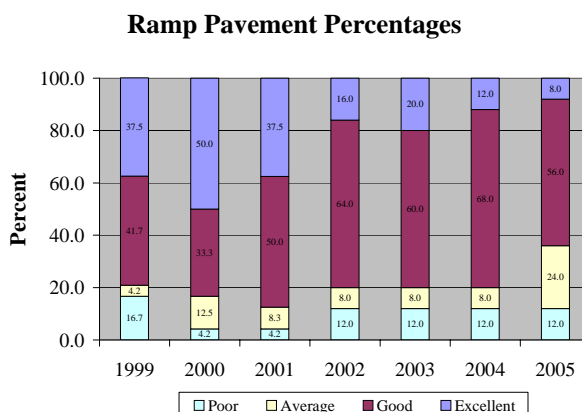


## Toll Plaza Ramp Pavement Summary

The Toll Road District has been inspecting and rating ramp pavement conditions for several years. Based upon engineering judgment the District has assigned the following rating system to the ramp pavement condition:

E - Excellent  
G - Good  
A - Average  
P - Poor

Like Mainline Pavement Conditions, Ramp Pavement Conditions have also fluctuated year to year as funding levels and pavement preservation projects varied. It is the Toll Road's goal to have no more than 10% of the ramp pavement in the poor category. The following charts documents the Ramp Pavement Conditions:



Indiana Toll Road District - Ramp Pavement Conditions															
		1999		2000		2001		2002		2003		2004		2005	
Route System	Rating	Ave PQI	%	Ave PQI	%	Ave PQI	%	Ave PQI	%	Ave PQI	%	Ave PQI	%	Ave PQI	%
Toll Plaza Ramps	% Excellent	N/A	38	N/A	50	N/A	38	N/A	16	N/A	20	N/A	12	N/A	8
	% Good		42		33		50		64		60		68		56
	% Average		4		13		8		8		8		8		24
	% Poor		17		4		4		12		12		12		12

## Travel Plaza Parking Lot Pavement Summary

The Toll Road District has been inspecting and rating the travel plaza parking lot pavement conditions for several years. Based upon engineering judgment the District has assigned the following rating system to the ramp pavement condition:

E - Excellent

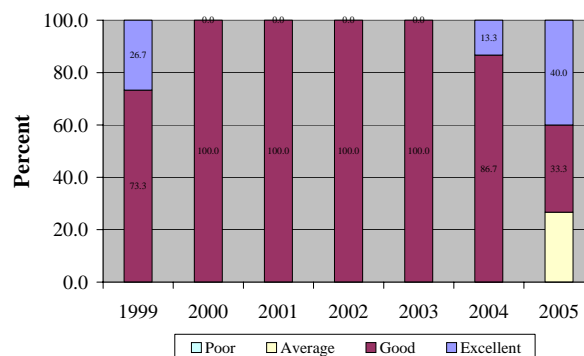
G - Good

A - Average

P - Poor

Like Mainline Pavement Conditions, Parking Lot Pavement Conditions have also fluctuated year to year as funding levels and pavement preservation projects varied. It is the Toll Road's goal to have no more than 10% of the parking lots in the poor category. The following charts documents the Parking Lot Pavement Conditions over the past several years.

**Parking Lot Pavement Percentages**



Indiana Toll Road District Pavement Conditions															
Route System	Rating	1999		2000		2001		2002		2003		2004		2005	
		Ave PQI	%	Ave PQI	%	Ave PQI	%	Ave PQI	%	Ave PQI	%	Ave PQI	%	Ave PQI	%
Travel Plaza Parking Lot	% Excellent	N/A	27	N/A	0	N/A	0	N/A	0	N/A	0	N/A	13	N/A	40
	% Good		73		100		100		100		100		87		33
	% Average		0		0		0		0		0		0		27
	% Poor		0		0		0		0		0		0		0

## Bridge Organizational Performance Index

The bridges of the Indiana Toll Road are inspected biennially. The Federal Highway Administration (FHWA) scale of 0-9 will be used as the Performance Index (PI) for the bridge items. The ratings are given numerical condition ratings as follows:

N	Not applicable
9	New condition
8	Good condition – no repair necessary.
7	Generally good condition – potential exists for minor maintenance.
6	Fair condition – potential exists for major maintenance.
5	Generally fair condition – potential exists for minor rehabilitation.
4	Marginal condition - potential exists for major rehabilitation.
3	Poor condition – repair of rehabilitation required immediately.
2	Critical condition – facility is closed. Study should determine feasibility for repair.
0	Critical condition – facility is closed and beyond repair.

For the purpose of the Bridge Organizational Performance Index, the following categories are evaluated:

- **Bridge Wearing Surface** – Defined as the top concrete or HMA surface of the bridge that provides smooth ride ability for the vehicles and protections for the bridge deck. If this item is rated  $\leq 5$  it should be considered deficient. The deficiency should be measured in square foot of the deck area. (Currently, data on the Wearing Surface was not available.)
- **Paint** - The protective item for the superstructure (steel beams and girder) against rust and corrosions. If the paint is rated  $\leq 5$  it should be considered deficient. The deficiency is measured in percentage of bridges with a rating  $\leq 5$ .
- **Deck** – Represents one of the bridge's major components which transfer the live (vehicular) load to the beams and girders (superstructure). If the deck is rated  $\leq 5$ , it should be considered deficient. The deficiency is measured in percentage of bridges with a rating  $\leq 5$ .
- **Superstructure** – Represents the load carrying components of the bridge. If the item is rated  $\leq 4$  it should be considered deficient. The deficiency is measured in percentage of bridges with a rating  $\leq 4$ .
- **Substructure** – Defined as the support for beams, girders, deck, railings, and other features. If the item is rated  $\leq 4$  it should be considered deficient. The deficiency is measured in percentage of bridges with a rating  $\leq 4$ .

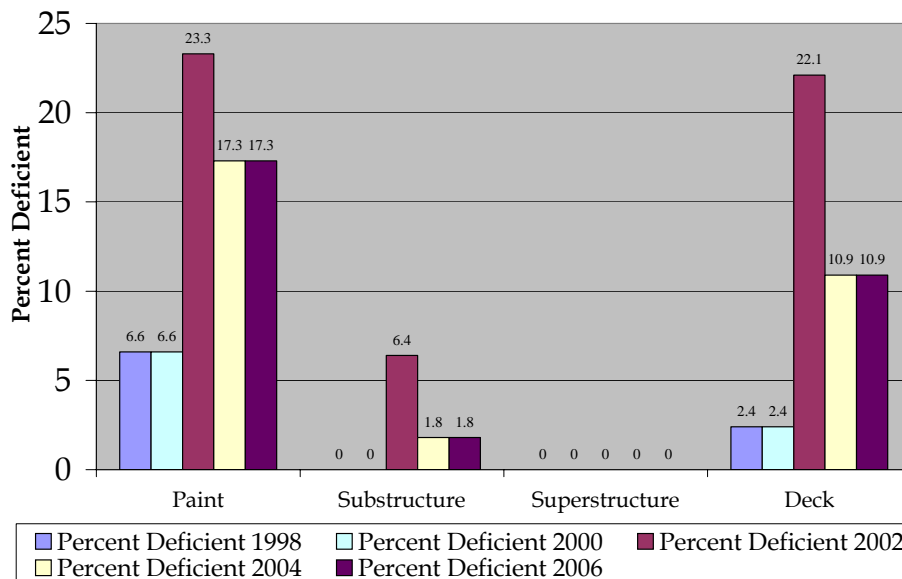


## Indiana Toll Road District Information – Bridge Summary

The Indiana Toll Road is responsible for 331 bridges. Every 2 years, each bridge is thoroughly inspected.

Bridge conditions have steadily improved over the last several years as bridge deficiency levels have stabilized. These overall conditions are expected to be sustainable and continue at below 5 percent deficient for each category.

### Bridge Deficiency Ratings



Indiana Toll Road District Bridge Conditions											
		1998		2000		2002		2004		2006	
	Rating	Avg Sufficiency Rating	% Def.	Avg Sufficiency Rating	% Def.	Avg Sufficiency Rating	% Def.	Avg Sufficiency Rating	% Def.	Avg Sufficiency Rating	% Def.
Wearing Surface	<= 5	n/a	n/a	n/a	n/a	83.8	n/a	86.7	n/a	n/a	n/a
Deck	<= 5		2		2		22		11		11
Paint	<= 5		7		7		23		17		17
Superstructure	<= 4		0		0		0		0		0
Substructure	<= 4		0		0		6		2		2

## Maintenance Items Organization Performance Index:

The Toll Road District also monitors maintenance operations performance through several OPI categories. Several items that are annually inspected are as follows:

- **Guardrail Deficiency** - Deficiencies are recorded for damaged or deteriorated guardrail, anchor assembly, bridge anchor assembly or impact attenuator, which does not properly function as a safety barrier.
- **Pavement Deficiency** - In addition to evaluating the pavement's PQI, pavement deficiencies are recorded for potholes, rutting, shoving blowup, and / or drop offs.
- **Vegetation Obstruction** - Deficiencies are recorded for any vegetation obscuring signage, and guardrail.
- **Litter** - Deficiencies are recorded for each segment where countable litter exceeds 10 items and for each large item litter.
- **Drainage Obstruction** - Deficiencies are recorded for any ditch or culvert where 50 percent of the cross section is obstructed and includes water pooling on the pavement. The presence of cattails does not necessarily indicate a drainage obstruction. In some instances, the Toll Road allows cattails to grow from environmental reasons.
- **Signs** - Deficiencies are recorded for any deteriorated signs that prevent the message from being clearly read. Examples of such are:
  - 1) Loss of message
  - 2) Damaged or twisted posts
  - 3) Loss of reflectivity
  - 4) Obsolete signs that confuse motorists.
- **Pavement Marking** - Deficiencies are recorded for missing, faded, or covered pavement markings. Examples of such markings are:
  - 1) Center line
  - 2) Pavement edge lines
  - 3) Delineation lines
- **Fences** - Deficiencies are recorded for any fence damage that prevents the fence from acting as a physical deterrent to large animals or people.

## Indiana Toll Road District Information – Mainline Maintenance Items Summary

Route System		
Mainline Pavement		
Eastbound	156.73	Lane Mile
Westbound	156.73	Lane Mile
Toll Plaza Ramps	42	Ramps
Travel Plaza Parking Lots	14	Lots

OPI Measures	Mainline Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / mile	OPI Goal	OPI Rating
Guardrail Deficiency	149	0.4754	>= 4	0
Pavement Deficiency	35	0.1117	>= 4	6
Vegetation Obstruction	2	0.0064	>= 4	6
Litter	275	0.8775	>= 4	6
Drainage Obstruction	4	0.0128	>= 4	6
Sign Deficiency	14	0.0447	>= 4	5
Pavement Marking Deficiency	49	0.1563	>= 4	5
Fence Deficiency	11	0.0351	>= 4	6

The goals for the Toll Road, for maintenance items along the mainline pavement will be to maintain an OPI of 4 or greater. In general the Toll Road is meeting or exceeding its goal. However, the guardrail deficiencies do not meet the stated goals and an action plan will need to be developed to improve the guardrail deficiencies.

## Maintenance 1 – Mainline Maintenance Item Information

Route System	M-1	
Mainline Pavement		
Eastbound	38	Lane Mile
Westbound	38	Lane Mile
Toll Plaza Ramps	19	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-1 Mainline Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / mile	OPI Goal	OPI Rating
Guardrail Deficiency	125	3.2895	>= 4	0
Pavement Deficiency	19	0.5000	>= 4	4
Vegetation Obstruction	1	0.0263	>= 4	5
Litter	110	2.8947	>= 4	5
Drainage Obstruction	3	0.0789	>= 4	3
Sign Deficiency	11	0.2895	>= 4	0
Pavement Marking Deficiency	4	0.1053	>= 4	5
Fence Deficiency	3	0.0789	>= 4	5

In general, the goals for the each maintenance district of the Toll Road for maintenance items along the mainline pavement will be to maintain an OPI of 4 or greater.

In M-1, the goals for the maintenance items along the mainline pavement have been met except for the guardrail deficiencies, drainage obstruction, and sign deficiency. An action plan will need to be developed to improve the areas that have not met the goals.

## Maintenance 2 – Mainline Maintenance Item Information

Route System	M-2	
Mainline Pavement		
Eastbound	35	Lane Mile
Westbound	35	Lane Mile
Toll Plaza Ramps	6	Ramps
Travel Plaza Parking Lots	2	Lots

OPI Measures	M-2 Mainline Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / mile	OPI Goal	OPI Rating
Guardrail Deficiency	7	0.2000	>= 4	4
Pavement Deficiency	10	0.2857	>= 4	5
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	85	2.4286	>= 4	5
Drainage Obstruction	0	0.0000	>= 4	6
Sign Deficiency	0	0.0000	>= 4	6
Pavement Marking Deficiency	6	0.1714	>= 4	4
Fence Deficiency	6	0.1714	>= 4	4

In general, the goals for the each maintenance district of the Toll Road for maintenance items along the mainline pavement will be to maintain an OPI of 4 or greater.

In M-2, the goals for all the maintenance items along the mainline pavement have been met.

### Maintenance 3 – Mainline Maintenance Item Information

Route System	M-3	
Mainline Pavement		
Eastbound	41	Lane Mile
Westbound	41	Lane Mile
Toll Plaza Ramps	12	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-3 Mainline Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / mile	OPI Goal	OPI Rating
Guardrail Deficiency	9	0.2195	>= 4	3
Pavement Deficiency	1	0.0244	>= 4	6
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	48	1.1707	>= 4	6
Drainage Obstruction	1	0.0122	>= 4	6
Sign Deficiency	3	0.0732	>= 4	4
Pavement Marking Deficiency	12	0.2927	>= 4	3
Fence Deficiency	2	0.0366	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items along the mainline pavement will be to maintain an OPI of 4 or greater.

In M-3, the goals for the maintenance items along the mainline pavement have been met except for the guardrail deficiencies and the pavement marking deficiencies. An action plan will need to be developed to improve the areas that have not met the goals.

## Maintenance 4 – Mainline Maintenance Item Information

Route System	M-4	
Mainline Pavement		
Eastbound	42.73	Lane Mile
Westbound	42.73	Lane Mile
Toll Plaza Ramps	5	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-4 Mainline Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / mile	OPI Goal	OPI Rating
Guardrail Deficiency	8	0.1872	>= 4	4
Pavement Deficiency	5	0.1170	>= 4	6
Vegetation Obstruction	1	0.0234	>= 4	5
Litter	32	0.7489	>= 4	6
Drainage Obstruction	1	0.0117	>= 4	6
Sign Deficiency	0	0.0000	>= 4	6
Pavement Marking Deficiency	27	0.6319	>= 4	0
Fence Deficiency	1	0.0117	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items along the mainline pavement will be to maintain an OPI of 4 or greater.

In M-4, the goals for the maintenance items along the mainline pavement have been met except for the pavement marking deficiencies. An action plan will need to be developed to improve the areas that have not met the goals.

## Indiana Toll Road District Information – Toll Plaza Ramp Maintenance Items Summary

Route System		
Mainline Pavement		
Eastbound	156.73	Lane Mile
Westbound	156.73	Lane Mile
Toll Plaza Ramps	42	Ramps
Travel Plaza Parking Lots	14	Lots

OPI Measures	Toll Plaza Ramp Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	34	0.8095	>= 4	0
Pavement Deficiency	46	1.0952	>= 4	0
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	156	3.7143	>= 4	1
Drainage Obstruction	7	0.1667	>= 4	5
Sign Deficiency	33	0.7857	>= 4	3
Pavement Marking Deficiency	29	0.6905	>= 4	4
Fence Deficiency	1	0.0238	>= 4	6

The goals for the Toll Road, for maintenance items along the Toll Plaza Ramps will be to maintain an OPI of 4 or greater. The Toll Road is meeting its goal with half the items. The guardrail deficiencies, pavement deficiencies, litter, and sign deficiencies do not meet the stated goals. An action plan will need to be developed to improve the items that do not meet the goal.



## Maintenance 1 – Toll Plaza Maintenance Item Information

Route System	M-1	
Mainline Pavement		
Eastbound	38	Lane Mile
Westbound	38	Lane Mile
Toll Plaza Ramps	19	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-1 Toll Plaza Ramp Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	30	1.5789	>= 4	0
Pavement Deficiency	35	1.8421	>= 4	0
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	128	6.7368	>= 4	0
Drainage Obstruction	3	0.1579	>= 4	5
Sign Deficiency	9	0.4737	>= 4	5
Pavement Marking Deficiency	10	0.5263	>= 4	4
Fence Deficiency	0	0.0000	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items along the Toll Plaza Ramps will be to maintain an OPI of 4 or greater.

In M-1, the goals for the maintenance items along the Toll Plaza Ramps of M-1 have been met except for the guardrail deficiencies, the pavement deficiencies, and litter deficiencies. An action plan will need to be developed to improve the areas that have not met the goals.

## Maintenance 2 – Toll Plaza Maintenance Item Information

Route System	M-2	
Mainline Pavement		
Eastbound	35	Lane Mile
Westbound	35	Lane Mile
Toll Plaza Ramps	6	Ramps
Travel Plaza Parking Lots	2	Lots

OPI Measures	M-2 Toll Plaza Ramp Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	0	0.0000	>= 4	6
Pavement Deficiency	1	0.1667	>= 4	6
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	5	0.8333	>= 4	6
Drainage Obstruction	3	0.5000	>= 4	4
Sign Deficiency	10	1.6667	>= 4	2
Pavement Marking Deficiency	2	0.3333	>= 4	6
Fence Deficiency	0	0.0000	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items along the Toll Plaza Ramps will be to maintain an OPI of 4 or greater.

In M-2, the goals for the maintenance items along the Toll Plaza Ramps of M-2 have been met except for the sign deficiencies. An action plan will need to be developed to improve the area that has not met the goal.

### Maintenance 3 – Toll Plaza Maintenance Item Information

Route System	M-3	
Mainline Pavement		
Eastbound	41	Lane Mile
Westbound	41	Lane Mile
Toll Plaza Ramps	12	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-3 Toll Plaza Ramp Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	3	0.2500	>= 4	5
Pavement Deficiency	3	0.2500	>= 4	5
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	4	0.3333	>= 4	6
Drainage Obstruction	1	0.0833	>= 4	6
Sign Deficiency	9	0.7500	>= 4	4
Pavement Marking Deficiency	8	0.6667	>= 4	4
Fence Deficiency	1	0.0833	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items along the Toll Plaza Ramps will be to maintain an OPI of 4 or greater.

In M-3, the goals for the maintenance items along the Toll Plaza Ramps of M-3 have been met.

## Maintenance 4 – Toll Plaza Maintenance Item Information

Route System	M-4	
Mainline Pavement		
Eastbound	42.73	Lane Mile
Westbound	42.73	Lane Mile
Toll Plaza Ramps	5	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-4 Toll Plaza Ramp Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	1	0.2000	>= 4	6
Pavement Deficiency	7	1.4000	>= 4	0
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	19	3.8000	>= 4	1
Drainage Obstruction	0	0.0000	>= 4	6
Sign Deficiency	5	1.0000	>= 4	4
Pavement Marking Deficiency	9	1.8000	>= 4	0
Fence Deficiency	0	0.0000	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items along the Toll Plaza Ramps will be to maintain an OPI of 4 or greater.

In M-4, the goals for the maintenance items along the Toll Plaza Ramps of M-4 have been met except for the pavement deficiencies, litter, and pavement marking deficiencies. An action plan will need to be developed to improve the areas that have not met the goals.

## Indiana Toll Road District Information – Travel Plaza Parking Lot Maintenance Items Summary

Route System		
Mainline Pavement		
Eastbound	156.73	Lane Mile
Westbound	156.73	Lane Mile
Toll Plaza Ramps	42	Ramps
Travel Plaza Parking Lots	14	Lots

OPI Measures	Travel Plaza Parking Lot Maintenance Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	3	0.2143	>= 4	5
Pavement Deficiency	39	2.7857	>= 4	0
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	90	6.4286	>= 4	0
Drainage Obstruction	6	0.4286	>= 4	2
Sign Deficiency	3	0.2143	>= 4	5
Pavement Marking Deficiency	4	0.2857	>= 4	4
Fence Deficiency	1	0.0714	>= 4	6

The goals for the Toll Road, for maintenance items in the Travel Plaza Parking Lots will be to maintain an OPI of 4 or greater. The Toll Road is meeting its goal except for the pavement deficiencies, litter, and drainage obstructions. An action plan will need to be developed to improve the items that do not meet the goal.

## Maintenance 1 - Travel Plaza Parking Lot Maintenance Item Information

Route System	M-1	
Mainline Pavement		
Eastbound	38	Lane Mile
Westbound	38	Lane Mile
Toll Plaza Ramps	19	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-1 Parking Lot Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	0	0.0000	>= 4	6
Pavement Deficiency	13	3.2500	>= 4	0
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	13	3.2500	>= 4	4
Drainage Obstruction	3	0.7500	>= 4	4
Sign Deficiency	2	0.5000	>= 4	5
Pavement Marking Deficiency	0	0.0000	>= 4	6
Fence Deficiency	0	0.0000	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items in the Travel Plaza Parking Lots will be to maintain an OPI of 4 or greater.

In M-1, the goals for the maintenance items in the Travel Plaza Parking Lots of M-1 have been met except for the pavement deficiencies. An action plan will need to be developed to improve the areas that have not met the goals.

## Maintenance 2 – Travel Plaza Parking Lot Maintenance Item Information

Route System	M-2	
Mainline Pavement		
Eastbound	35	Lane Mile
Westbound	35	Lane Mile
Toll Plaza Ramps	6	Ramps
Travel Plaza Parking Lots	2	Lots

OPI Measures	M-2 Parking Lot Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	0	0.0000	>= 4	6
Pavement Deficiency	7	3.5000	>= 4	0
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	5	2.5000	>= 4	5
Drainage Obstruction	2	1.0000	>= 4	5
Sign Deficiency	0	0.0000	>= 4	6
Pavement Marking Deficiency	0	0.0000	>= 4	6
Fence Deficiency	0	0.0000	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items in the Travel Plaza Parking Lots will be to maintain an OPI of 4 or greater.

In M-2, the goals for the maintenance items in the Travel Plaza Parking Lots of M-2 have been met except for the pavement deficiencies. An action plan will need to be developed to improve the areas that have not met the goals.

### Maintenance 3 - Travel Plaza Parking Lot Maintenance Item Information

Route System	M-3	
Mainline Pavement		
Eastbound	41	Lane Mile
Westbound	41	Lane Mile
Toll Plaza Ramps	12	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-3 Parking Lot Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	0	0.0000	>= 4	6
Pavement Deficiency	10	2.5000	>= 4	0
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	64	16.0000	>= 4	0
Drainage Obstruction	0	0.0000	>= 4	6
Sign Deficiency	0	0.0000	>= 4	6
Pavement Marking Deficiency	0	0.0000	>= 4	6
Fence Deficiency	0	0.0000	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items in the Travel Plaza Parking Lots will be to maintain an OPI of 4 or greater.

In M-3, the goals for the maintenance items in the Travel Plaza Parking Lots of M-3 have been met except for the pavement deficiencies and litter. An action plan will need to be developed to improve the areas that have not met the goals.



## Maintenance 4 - Travel Plaza Parking Lot Maintenance Item Information

Route System	M-4	
Mainline Pavement		
Eastbound	42.73	Lane Mile
Westbound	42.73	Lane Mile
Toll Plaza Ramps	5	Ramps
Travel Plaza Parking Lots	4	Lots

OPI Measures	M-4 Parking Lot Maintenance Item Deficiencies			
	2005			
	Deficiencies	def / plaza	OPI Goal	OPI Rating
Guardrail Deficiency	3	0.7500	>= 4	4
Pavement Deficiency	9	2.2500	>= 4	0
Vegetation Obstruction	0	0.0000	>= 4	6
Litter	8	2.0000	>= 4	6
Drainage Obstruction	1	0.2500	>= 4	6
Sign Deficiency	1	0.2500	>= 4	6
Pavement Marking Deficiency	4	1.0000	>= 4	3
Fence Deficiency	1	0.2500	>= 4	6

In general, the goals for the each maintenance district of the Toll Road for maintenance items in the Travel Plaza Parking Lots will be to maintain an OPI of 4 or greater.

In M-4, the goals for the maintenance items in the Travel Plaza Parking Lots of M-4 have been met except for the pavement deficiencies and pavement marking deficiencies. An action plan will need to be developed to improve the areas that have not met the goals.

**PART B**  
**DETAILED REVIEW**

## SECTION 1

### BACKGROUND AND GENERAL INFORMATION

#### 1.1 TRUST AGREEMENT

On September 1, 1985, the Indiana Toll Finance Authority entered into a Trust Indenture with Merchants National Bank & Trust Company of Indianapolis (now National City Bank of Indiana) as Indenture Trustee for the benefit of bondholders of 1985 Series, Indiana Toll Finance Authority Toll Road Revenue Refunding Bonds. In accordance with the terms of the Trust Indenture, the Authority agreed that it would employ as Consulting Engineers a national or regional independent engineer or engineering firm of recognized standing for the purpose of performing and carrying out the duties imposed on Consulting Engineers by the 1985 Trust Indenture. On September 1, 1985, the Authority entered into a Lease of the Indiana Toll Road with the Indiana Department of Highways, pursuant to which the Department agreed to perform all covenants of the Authority arising from the 1985 Trust Indenture, including the covenant to retain a Consulting Engineer.

#### 1.2 CONSULTING ENGINEER (RQAW)

On June 7, 2002, RQAW Corporation was retained as the Consulting Engineer for the Indiana Toll Road. One of the duties required of the Consulting Engineer is to perform an annual inspection of the Toll Road and to prepare a written report, which addresses the following elements:

1. Findings regarding whether the Toll Road has been maintained in good repair, working order and condition;
2. Recommendations as to proper maintenance, repair, and operation of the Toll Road during the ensuing fiscal year;
3. Estimated amount and details of the Operating Expenses for such ensuing fiscal year;
4. Recommendations regarding the amount of insurance to be carried by the Toll Road;
5. Recommendations regarding the deposit to be made to the Major Expense Fund for the following five (5) fiscal years (providing both a recommended and minimum deposit).

As an additional element of its annual report preparation, RQAW was requested to review and update the Toll Road's Ten Year Needs Study. RQAW examined all existing data relative to maintenance and operation, including past and current inspection reports for the facility. The data, as well as RQAW's opinion of probable associated costs, was used to determine facility needs and priorities over the next decade.

These were developed based on the need for maintaining a facility capable of safely accommodating the anticipated traffic loads and providing a high level of service to the patrons. To fulfill the prescribed study objectives, the work program was structured to consider the following elements:

- |  |   |
|--|---|
| 1. Bridges                               | 10. Travel Plazas/Trucks Only Travel Plazas |
| 2. Pavement                              | 11. Communications                          |
| 3. Guardrail                             | 12. Toll Collection Technologies            |
| 4. Fence                                 | 13. Office Automation Technology            |
| 5. Buildings                             | 14. Signing and Lighting                    |
| 6. Hazardous Material Management         | 15. Rolling Stock and Maintenance Equipment |
| 7. Wastewater Treatment Facilities       | 16. Hoosier Helpers                         |
| 8. Water Supply and Treatment Facilities | 17. Landscaping                             |
| 9. Regulatory Compliance.                | 18. Future Needs/Additional Projects        |

### **1.3 INDOT AND GAO REQUIREMENTS FOR GASB 34**

In accordance with the INDOT and Government Accounting Office (GAO) of the Federal Government requirements for Governmental Accounting Standards Board (GASB) Statement No. 34, the following is the Condition Rating of the Interstate Pavement and Bridges as of June 30, 2005 for the Toll Road District:

#### **A. General**

As allowed by the GASB Statement No. 34, Basic Financial Statements and Management's Discussion and Analysis-for State and Local Governments, the State has adopted an alternative process for recording depreciation expense on selected infrastructure assets. Under this alternative method, referred to as the

modified approach, the State expenses certain maintenance and preservation costs and does not report depreciation expense. Assets accounted for under the modified approach include approximately 23,000 (+/-) lane-miles of roads and approximately 5,100 bridges that the State is responsible to maintain.

In order to utilize the modified approach, the State is required to:

1. Maintain an asset management system that includes an up-to-date inventory of eligible infrastructure assets.
2. Perform condition assessments of eligible assets and summarize the results using a measurement scale.
3. Estimate each year the annual amount to maintain and preserve the assets at the condition level established and disclosed by the State.
4. Document that the assets are being preserved approximately at, or above, the established condition level.

#### B. Roads

##### 1. Measurement Scale

The Indiana Department of Transportation (INDOT) field measures International Roughness Index (IRI), Rut, and Pavement Condition Rating (PCR) to determine the condition of roadway pavements.

Since 1998 INDOT uses the Pavement Quality Index (PQI) as the State's primary method to rate pavement conditions for monitoring purposes. The rating established by PQI is a calculated composite index of the above three measured factors and ranges from 100 to 0. Indiana's PQI rating system is used for both asphalt and concrete pavements. (See Section 1.3.B.4 for definition of terms and equation used to calculate the index.)

In 2005, INDOT published the "Pavement Organization Performance Index" (POPI) which discussed and documented the PQI equation. A discrepancy between the PQI equation in the POPI document and the original PQI formula was discovered. INDOT has since verified that the correct equation was the one listed in the POPI document. For the FY 2005, the past PQI were re-calculated using the correct PQI formula.

## 2. Current Condition Levels

The State assesses condition for Interstate highways on a calendar year basis, and for other highways on a biennial basis. The following table reports the target average PQI, the current average PQI, and the current percentage of pavement mileage in “Excellent”, “Good”, “Fair” or “Poor” condition.

Current Year (FY 2005)				
System	Target PQI	Current Avg. PQI	Percent mileage	
Toll Road	80	82	Excellent	22%
			Good	44%
			Fair	25%
			Poor	10%

## 3. Past Condition Levels

The following table reports the Average PQI of pavements since 1999.

Fiscal Year	Toll Road	Years
2005	82	2005-2004
2004	88	2004-2003
2003	84	2003-2002
2002	85	2002-2001
2001	86	2001-2000
2000	89	2000-1999
1999	90	1999-1998

## 4. Technical Overview for Pavement Condition Values

This section provides a technical overview of the procedures used to establish Indiana’s pavement condition values, as well as defining the terminology used establish Pavement Quality Index (PQI).

Indiana's pavement conditions are calculated as a weighted average over the contract length in both the increasing and decreasing direction and consist of the Pavement Condition Rating (PCR), rut depth (in inches), the International Roughness Index (IRI), the Pavement Quality Index (PQI), and the contract section traffic. The following is a brief explanation of these items.

- a. IRI (International Roughness Index) is a measure of the ride of the pavement. It measures the "bumpiness" of the pavement in terms of inches per mile, the higher the number the rougher the ride. The index is set-up such that excellent pavements are in the 60 to 100 range, good pavements are in the 100 to 150 range, fair pavements are in the 150 to 200 range, and poor pavements are over 200.
- b. Rut is a measure of the average depth of ruts in the wheel paths of a pavement. Rutting is most common on bituminous pavements and a severely rutted pavement would have average ruts of 0.25" or larger. Generally, rutting does not occur on concrete pavement unless it is very old (in the range of 25-plus years).
- c. PCR (Pavement Condition Rating) is a measure of the distresses on a pavement surface. These distresses include transverse cracking, longitudinal cracking, blocking cracking, etc. The pavement is reviewed at each reference post for 500', the distresses are rated for severity and quantity, and a value is determined. These values (deduct points) are subtracted from 100 to determine the PCR. The rating goes from 100 to 0 with excellent pavements in the 100 to 90 range, good pavements in the 90 to 80 range, fair pavements in the 80 to 70 range, and poor pavements below 70.

- d. PQI is a composite index of the above factors and is determined by the following formula:

$$PQI = (10 * PSI) + (0.5 * PCR) - (25 * Rut)$$

Where  $PSI = 9.0 * e^{(-0.008747 * IRI)}$  with an upper limit of 5; PCR is a 100 point scale, and Rut is in inches and limited to 1". The rating goes from 100 to 0 with excellent pavements in the 90 to 100 range, good pavements in the 80 to 90 range, fair pavements in the 70 to 80 range, and poor pavements below 70.

Rating Criteria			
PQI Index	PQI Rating	Asphalt Pavement Condition	Concrete Pavement Condition
90 to 100	Excellent	Pavement shows no visible deterioration.	Same
80 to 90	Good	Pavement shows some indication of initial deterioration present, but not yet requiring appreciable amounts of maintenance. Distress items include the start of small transverse and/or longitudinal cracks. Slight rutting may be apparent in the wheel path.	Pavement shows some indication of initial deterioration present, but not yet requiring appreciable amounts of maintenance. Distress items may include the start of small transverse and/or longitudinal cracks, or slight seam and joint separation. Joints may show very small amounts of deterioration.
70 to 80	Fair	Pavement shows average deterioration requiring occasional routine maintenance. Distresses may include minor transverse and longitudinal cracking; becoming continuous throughout the segment. Severe cracking is patched effectively. Rutting may be a little more severe and hold small amounts of water.	Pavement shows average deterioration requiring occasional routine maintenance. Distresses may include minor transverse and longitudinal cracking; becoming continuous throughout the segment. Severe cracking is patched effectively. Through lanes and shoulders may begin to show separation from failing tie bars.
Below 70	Poor	Pavement shows excessive deterioration requiring frequent maintenance and warrants resurfacing soon. Distress may be evident in wide transverse and longitudinal cracks. Severe "shallow cracking" could be evident if the pavement is composite. If the segment has been patched, the cracks may be showing through. Rutting is severe and may affect driving.	Pavement shows excessive deterioration requiring frequent maintenance and warrants resurfacing soon. Distress may be evident in wide transverse and longitudinal cracks. If the segment has been patched, cracks may be showing through. Joint repairs could begin to fail. Shoulder and/or through-lane separation may be apparent. Pop outs or spalling could also be present in the section.



## C. Bridges

### 1. Sufficiency Rating Formula

Bridge sufficiency ratings are calculated based on the formula and guidelines provided by the Federal Highway Administration (FHWA) in the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," also known as the Bridge Inspections Coding Guide. According to the Coding Guide, the sufficiency rating formula is a method of evaluating data by calculating four separate factors (S1, S2, S3 and S4) to obtain a numeric value which is indicative of bridge sufficiency to remain in service. The result of this method is a percentage in which 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient or deficient bridge. It is reasonable to conclude that bridges with a sufficiency rating of:

90% - 100% are generally in Excellent Condition.  
80% - 90% are generally in Good Condition.  
70% - 80% are generally Fair Condition.  
60% - 70% are generally Marginal Condition.  
Below 60% are generally in Poor Condition.

See Section 1.3.C.3 for definition of index terms and formula.

### 2. Current Condition Levels

Based on the current bridge sufficiency ratings and information available in the bridge inspection database, the following is the average sufficiency ratings that have been generated for the Toll Road bridges. This information is based on the 2005-2006 Biennial Bridge Inspection Report.

Road Class	# of Bridges	Ave. Suff. Rating	Min. Acceptable
-----	-----	-----	-----
Interstate	331	87.2%	87%

### 3. Technical Overview for Bridge Sufficiency Ratings

$$\text{Bridge Sufficiency Rating} = S1+S2+S3+S4,$$

And when a S1, S2, S3, or S4 Rating might typically equal:

9 – 6	no reduction is made in the variable's value.
5	a 10% deduction if effected in the variable's value.
4	a 25% deduction is effected in the variable's value.
3	a 40% deduction is effected in the variable's value.
2 - 1	a 55% deduction is effected in the variable's value.

Where;

S1 represents the Structural Adequacy and Safety of the bridge which is indicative of the bridge's main element conditions such as Superstructure, Substructure, Culvert and the load carry capacity of the bridge. These elements are evaluated or rated based on the scale of 0-9. If rating of any of these elements falls below 6, it will deduct a percentage value from the 100 depending on the rating, up to maximum of 55% total.

S2 represents the Serviceability and Functional Obsolescence which is indicative of the bridge's geometry, structure type and the importance of the facility that bridge carries. It includes thirteen different items and is evaluated based on the 0-9 scale using the current standards. If the rating of any of these elements falls below 6, it will deduct a percentage value from the 100 depending on the rating, up to maximum of 30% total.

S3 represents Essentiality for Public Use which includes the Detour Length, Average Daily Traffic and Defense Highway Designation. These items are evaluated according to the guidelines provided by the FHWA in the Bridge Inspections Coding Guide. If rating of any of these elements falls below 6, it will deduct a percentage value from the 100 depending on the rating, up to maximum of 15% total.

S4 represents Special Reductions (and is used when S1 + S2 + S3 is equal or less than 50%). Guidelines for evaluating this item are provided in the Bridge Inspections Coding Guide. If rating of any of these elements falls below 6, it will deduct a percentage value from the 100 depending on the rating, to maximum of 13% total.

D. Budgeted and Estimated Costs to Maintain

The following table presents the Toll Road's estimate of spending necessary to preserve and maintain the roads and bridges at, or above, the "Established Condition Levels" cited above, and the actual amount spent during the past five fiscal years (dollars in thousands):

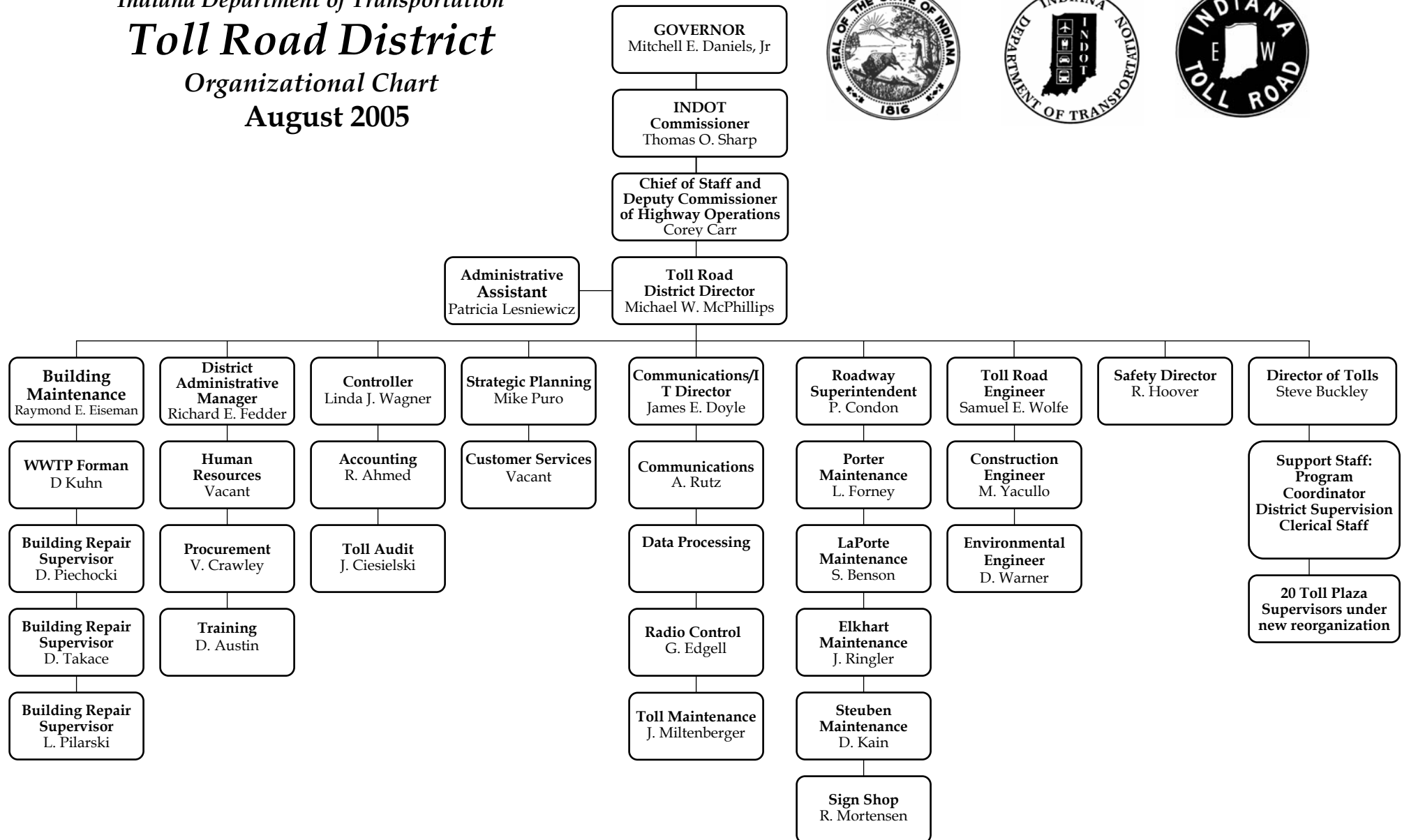
Fiscal Year	2005	2004	2003	2002
Interstate Roads (Toll Road)				
Planned	6,223	22,175	17,475	14,280
Actual	19,190	15,406	15,140	8,280
Interstate Bridges (Toll Road)				
Planned	12,980	24,232	21,420	17,683
Actual	20,619	16,340	16,415	10,982

Note: Historical, comparative data will be accumulated starting from Fiscal Year 2001-2002.

The Department of Transportation's Plan reflects construction contracts to be awarded in one fiscal period, although payout shall likely extend over multiple fiscal years. In comparison, the Actual spending is based on costs expended during the current fiscal year, including engineering & inspection, railroad and utility relocations, as well as construction contracts (from contracts awarded in previous fiscal years) . Therefore, given such timing considerations, analysis of data from one fiscal period may not be an effective indicator of the State's preservation activities. The above figures include costs for both Major Expense Fund Projects and the 2000 Additional Project.



Indiana Department of Transportation  
**Toll Road District**  
 Organizational Chart  
 August 2005



## SECTION 2

### FACILITY INSPECTION AND IMPROVEMENT RECOMMENDATIONS

#### 2.1 BRIDGES

##### A. General

During July, August and September 2005, bridge inspections were performed on three hundred thirty one (331) bridges under the authority of the Indiana Department of Transportation's Toll Road District. Of the 331 bridges inspected, 24 were selected for further in-depth annual inspection because they fell into categories C or D of the following categories (Table A): A) classified as potential for scour; B) have pin or hinge connections; C) fracture critical; D) scheduled for rehabilitation within the next three years or identified as bridges to be closely monitored. While such an investigation is subject to the judgment of the personnel performing the inspections, every effort was made to exercise a professional level of judgment. Due to the fact that the inspection was visual, there may be instances where concealed or less apparent deficiencies have not been reported. In general, the bridges, as a whole, were in fair condition.

Most of the structures on the Indiana Toll Road were built in the 1950's. All the structures that the Toll Road is responsible for maintaining have either been rehabilitated or are in the Rehabilitation Program.

During calendar year 2005, two (2) contracts, each containing four (4) Toll Road Bridges were let placing a total of eight (8) Toll Road bridges under construction as part of the ongoing bridge rehabilitation program. The first contract let in February 2005 involved the widening and reconstruction of the existing substructures and the construction of new decks and superstructures for structures (50-10 EB & WB and 51-2 EB & WB). Construction of the eastbound structures and removal of the westbound structures is complete. Construction of the westbound structures has begun. The second contract let in March 2005 involved the widening and reconstruction of the existing substructures and the construction of new decks and superstructures for structures (37-2 EB & WB and 37-3 EB & WB). Construction of the eastbound structures has begun. Traffic is being maintained on the existing westbound structures. It is anticipated that all eight (8) structures will be complete by the end of this construction season.

The replacement of structures (10-2 EB & WB, 11-1 and 11-2) and the addition of structure (10-1T) began in 2004. It is anticipated that construction of these structures will be complete by the end of this construction season (2005).

Two (2) contracts with a total of six (6) structures (34-5 EB & WB, 35-1 EB & WB, 51-6 EB & WB and 51-7 EB & WB) are scheduled for letting in early 2006 with construction to start in April or May of 2006.

**TABLE A**  
**SPECIAL DETAIL BRIDGES**

STRUCTURE NO.	MP	FEATURE INTERSECTED	(A)	(B)	(C)	(D)
1A-1	.08	US 12, 20, 41, SR 152			X	
5-2 EBL & WBL	6.56	Grand Calumet River, Roxana Drive	X	X		
10(02) WX	10.16	Grand Calumet River	X			
10(03) EX	10.15	Grand Calumet River	X			
10(04) EN	10.06	Grand Calumet River	X			
10(05) WN	10.05	Grand Calumet River	X			
9-7 Ramp	13.50	Grand Calumet River		X		
9-8 Ramp	13.50	Grand Calumet River		X		
9-1 EBL & WBL	14.54	Virginia Street		X	X	
23-2 EBL&WBL	58.56	Hunt's Road				X**
24-A EBL & WBL	61.83	C.R. 900 East				X**
25-B EBL & WBL	67.07	Tamarak Road				X**
28-1 EBL & WBL	75.97	St. Joseph River	X		X	
33-1 EBL & WBL	91.15	Christiana Creek				X
36-1 EBL & WBL	100.14	C.R. 25 & St. Joseph River	X			X
40/41-1 EBL & WBL	112.55	Pigeon River				X*
42-1 EBL & WBL	119.08	Fawn River (West Crossing)				X*
44-1 EBL & WBL	122.06	Fawn River (Middle Crossing)				X*
47-1 EBL & WBL	131.41	Fawn River (East Crossing)				X*
I69-156-4820A	‡ 155.47	I-69				X
<b>TOTAL STRUCTURES: 30</b>			<b>10</b>	<b>6</b>	<b>5</b>	<b>19</b>

Notes:

(A) Underwater Inspection for Scour (5-Year Inspection Cycle)

(B) Pin or Hinge Inspection (5-year Inspection Cycle)

(C) Fracture Critical Inspection (1-Year Inspection Cycle)

(D) Structures to monitor (1-Year Inspection Cycle) or scheduled for rehabilitation in next three years

‡ Structure located off of I-69

\* Structures to be inspected annually at low water conditions for scour (Not part of 5-Year INDOT underwater inspection).

\*\* Excessive deck pounding has been observed for Structures 24-A EBL & WBL and 25-B EBL & WBL with significant concrete spalling along the beam/deck interface. These structures will be inspected on a yearly basis until the deck has been rehabilitated or replaced at which point the structures will revert back to a biennial inspection.



## B. Fracture Critical

Structures 1A-1, 9-1 EB and WB and 28-1 EB and WB are classified as fracture critical. The fracture critical inspections for Structures 28-1 EB & WB, 1A-1, and 9-1 EB & WB were performed on August 16, 2005, September 6, 2005 and September 7, 2005 respectively. The reason for the inspections was to satisfy requirements of the National Bridge Inspection Standards. The following summarizes the inspection results.

Structure 1A-1 is fracture critical due to the two (2) column steel bent substructure system supporting portions of each bridge. Because of past rehabilitation measures, the structure appeared to be in good condition. There is minor to moderate rust throughout the structure, but no visible distress in the fracture critical members of the steel substructure was evident.

Structures 9-1 EB and WB are fracture critical due to the steel substructure supporting columns and the presence of hinges in the steel bent cap. The steel bents are in fair condition with no visible distress in the fracture critical members other than corrosion. Corrosion has become a concern with these structures which show moderate to severe rusting of the steel superstructure. In 1999, repairs were made to the angles connecting the stringers to the steel bent. Web splice plates were added to several of the stringers near the end diaphragm in order to repair the severely deteriorated web in 1999 and in 2001. Similar repairs will be required in the near future if these structures are not replaced. Preliminary plans have been developed as part of project 2000 to remove these structures and replace them with individual bridges over Broadway, Virginia Street and E.J. & E. Railroad. Fill and Mechanically Stabilized Earth (MSE) retaining walls will be used to replace the remaining portions of the removed structure. This work was scheduled for construction in 2005 and 2006.

Structures 28-1 EB and WB are fracture critical due to the two (2) girder superstructure supporting system. Minor rust was visible on the bottom flanges of the girders causing the bottom cover plates to warp.

## C. Underwater Inspection

Ten (10) bridge structures have been inspected for potential scour and/or corrosion damage. These structures include:

<u>STRUCTURE NO.</u>	<u>MP</u>	<u>FEATURE INTERSECTED</u>
5-2 EBL	6.56	Over Grand Calumet River (Roxana Dr.)
5-2 WBL	6.56	Over Grand Calumet River (Roxana Dr.)
10(02) WX	10.16	Over Grand Calumet River
10(03) EX	10.15	Over Grand Calumet River
10(04) EN	10.05	Over Grand Calumet River
10(05) WN	10.05	Over Grand Calumet River
28-1 EBL	75.97	Over St. Joseph River
28-1 WBL	75.97	Over St. Joseph River
36-1 EBL	100.14	Over St. Joseph River
36-1 WBL	100.14	Over St. Joseph River

The above structures had an underwater inspection conducted in 1994. A qualified Underwater Bridge Inspection Consultant should make underwater inspections every 5 years. In order to meet this requirement, the above structures will be included in an Indiana Department of Transportation (INDOT) underwater inspection contract, which has been let. The underwater inspection was scheduled for early 2002, however, the work was postponed.

#### D. Pin and Hinge Inspection

The following structures had a pin or hinge inspection during September and October of 2000 and there were no major problems found:

<u>STRUCTURE NO.</u>	<u>MP</u>	<u>FEATURE INTERSECTED</u>
5-2 EBL & WBL	6.56	Over Grand Calumet River & Roxana Drive
*9-1 EBL & WBL	14.54	Over Virginia Street (Examined in 1996 as part of steel rehabilitation)
9-7	13.50	Ramp Over Grand Calumet River
9-8	13.50	Ramp Over Grand Calumet River

\*Not included in the 2000 inspection.

The preceding structures are on a 5-year inspection cycle, therefore the pins and hinges of these structures should be inspected and tested by a qualified inspector in order to satisfy the National Bridge Inspection Standards. These inspection services are provided on a statewide program conducted by INDOT's Bridge Division.

## E. Vertical Clearance

Indiana Department of Transportation Design Memorandum #44 requires all structures over the interstate system to have a minimum vertical clearance of 16'-1" (4.9 meters). A list of bridges over the Toll Road that do not meet this requirement is shown in Table B, which also shows the vertical clearance of each structure. In order to meet this requirement the bridge deck will be raised when the structure undergoes scheduled renovation so that the minimum clearance is obtained. There are 39 remaining bridges passing over the Toll Road with a vertical clearance less than 16'-1" (4.9 meters), with the minimum clearance being 15'-4" (4.67 meters). Seven (7) structures in Elkhart and St. Joseph counties were renovated in the 2002 construction season and either the deck of the bridge was raised or the mainline pavement grade under the structure was altered to meet the minimum vertical clearance. The remaining structures will be adjusted to meet the required minimum vertical clearance through either pavement rehabilitation or structure renovation over the next several years. Since there are a number of the remaining bridges that are very close to meeting the minimum clearance requirements, RQAW engineers will investigate these structures during the coming year to determine if minor adjustments to underlying pavement grades can provide an economical solution to the problem.

**TABLE B**  
**BRIDGES WITH A MINIMUM VERTICAL CLEARANCE LESS THAN 16'-1" (4.9 METERS)**

Structure	Milepost	Clearance	Year	Structure	Milepost	Clearance	Year
11-3	19.05	16'-0"	@	37-1	100.71	15'-9"	@
BHX-A	20.68	15'-10"	@	38-1	106.97	15'-6"	@
15-5	28.41	16'-0"	@	38-2	107.31	15'-8"	@
15-8	29.42	16'-0"	@	38-3	108.39	15'-4"	@
16-2	30.76	15'-9"	@	39-1	108.90	15'-8"	@
16-5	31.99	16'-0"	@	39-2	110.42	15'-7"	@
17-4	35.57	15'-10"	@	39-3	111.43	15'-10"	@
18-5	39.01	16'-0"	@	39-4	112.41	15'-10"	@
19-3	43.89	15'-11"	@	40/41-2	113.43	15'-9"	@
19-5	46.30	16'-0"	@	40/41-3	114.55	15'-9"	@
20-4	49.32	15'-10"	@	40/41-4	116.02	15'-9"	@
21-3	52.08	15'-9"	@	40/41-5	116.78	15'-7"	@
22-1	53.37	15'-10"	@	40/41-6	117.56	15'-10"	@
22-2	54.58	15'-10"	@	43-6	121.67	15'-8"	@
22-3	56.31	15'-9"	@	45-1	123.18	15'-10"	@
WX-1	72.45	16'-0"	@	45-5	124.45	15'-9"	@
27-ANBL	74.67	15'-11"	@	45-6	125.45	15'-11"	@
27-ASBL	74.66	16'-0"	@	46-1	126.50	15'-9"	@
30-5	81.50	15'-10"	@	51-1	144.68	15'-10"	@
34-2	91.94	15'-9"	@				
@ = Other renovation (includes pavement rehabilitation or structure renovation)							

F. INDOT and GAO Requirements for GASB 34 (Bridges)

Bridge sufficiency ratings are calculated based on the formula and guidelines provided by the Federal Highway Administration (FHWA) in the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," also known as the Bridge Inspections Coding Guide. According to the Coding Guide, the sufficiency rating formula is a method of evaluating data by calculating four separate factors (S1, S2, S3 and S4) to obtain a numeric value which is indicative of bridge sufficiency to remain in service. The result of this method is a percentage in which 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient or deficient bridge. It is reasonable to conclude that bridges with a sufficiency rating of:

- 90% - 100% are generally in Excellent Condition.
- 80% - 90% are generally in Good Condition.
- 70% - 80% are generally Fair Condition.
- 60% - 70% are generally Marginal Condition.
- Below 60% are generally in Poor Condition.

See Section 1.3.C.3 for definition of terms and formula used to calculate the index.

RQAW has reviewed the condition ratings from the 2003-2004 Biennial Bridge Inspection Report. The majority of the Toll Road bridges are in good condition with only twenty-one (21) of the total three-hundred-thirty one (331) structures rated as having the potential for requiring major rehabilitation in the near future. Ten (10) of those twenty-one (21) structures are scheduled for total replacement or widening and major rehabilitation within the next two (2) to five (5) years as part of the 2000 Additional Project. The Additional Project is for the construction of additional lanes and the modification of two (2) major interchanges. All of the remaining eleven (11) bridges are in the ten (10) year bridge rehabilitation program. There are no bridges on the Toll Road that are impaired or load restricted.

Bridge sufficiency ratings from the 2005-2006 Biennial Bridge Inspection Report are not yet available.

## 2.2 PAVEMENT

### A. General

The Toll Road pavement is generally in a good state of repair, but as is typical for a facility of this type and age, it is essential that an ongoing resurfacing program be maintained. From 1974 through 1980 the roadway was completely resurfaced with bituminous asphalt covering the original plain jointed concrete pavement constructed in the 1950's. A second resurfacing cycle was completed from 1980 through 1992, and on these second generations resurfacing projects, existing asphalt overlays were generally milled throughout and replaced with new material. By milling existing overlays, the bridge clearances could be maintained for those bridges going over the Toll Road.

Beginning in 1993 and through and including 1995, the District utilized In-Place-Recycling on many resurfacing projects. This method was sometimes used on both the traveled and passing lanes however, it was more frequently used only in the passing lane. On the more conventional resurfacing projects where existing overlays were milled and replaced with new material, the Toll Road District used the milled material as 25 to 40 percent of the new asphalt pavement being constructed. The introduction of new superpave specifications in 1997 and 1998 substantially reduced the allowable amount of this milled material that can be used in the new asphalt mix to less than 15 percent. On a major resurfacing project in 1998, existing asphalt overlays were milled full depth and underlying concrete pavement was cracked and sealed and resurfaced with new asphalt materials. A considerable amount of the milled material from this project was utilized as subbase material for the reconstruction of shoulders. The District continues to use some of this excess milled material for erosion control and parking lot expansions at various locations and facilities of the Toll Road, but will possibly need to seek other ways of using the excess material in the future.

In 1999, the District began a Wedge and Level Program and the Program has been continued in successive years through 2005. This work consists of milling off approximately 1¼" of existing pavement and replacing it with new surface material. This process has been utilized to extend the life of relatively sound

pavements that are beginning to develop minor to moderate surface distresses. These pavements in general do not show any rutting or other base problems, with only the surface deterioration affecting the ride-ability of the pavement. This procedure is being used at various locations throughout the Toll Road, both in the traveled lane and the passing lane. During the early part of the Program in 1999 and 2000 this work was done more predominately in the traveled lane. However, from 2001 through 2004 there has been considerable work done in both the traveled lanes and the passing lanes. In 2005, the Wedge and Level Program also focused on shoulders as well as both traveled and passing lanes

RQAW Engineers have developed a graphical representation of the Wedge and Level History showing year and location of the work, which is being utilized by Toll Road Personnel in planning the future wedge and level projects. (See Appendix B - Wedge and Level Schedule)

During the 2005 pavement inspection, RQAW and Toll Road Personnel observed that the Wedge and Level work done from 1999 thru 2005 is performing well and is providing the extended life of the pavement as initially intended.

Most of the Wedge and Level materials placed in 1999 are still in service after six (6) years, however, they are beginning to show minor to moderate surface distresses.

The life of a full-depth resurface is approximately seven (7) to ten (10) years. If the use of this process provides an additional life of five (5) to six (6) years with this minimal surface treatment, it is proving to be an effective and economical means for extending the life of relatively sound pavements that have only minor to moderate surface deterioration.

In order to provide a general evaluation of the pavement, RQAW employs a rating system for the general conditions of the pavement. The ratings used are as follows:

<u>Condition Rating</u>	<u>Definition</u>
Excellent	- Pavement segment in ideal condition.
Good	- Pavement segment in good condition with signs of distress beginning to show.
Average	- Pavement segment showing distress, but in acceptable condition.
Poor	- Pavement segment in poor condition, but usable.
Failure	- Pavement segment is in unacceptable condition to handle traffic safely.

To aid in the evaluation of resurfacing by maintenance engineers, RQAW assigned resurfacing priorities to the various segments of pavement. Priorities for pavement resurfacing were determined based upon the severity of observed distresses and surface deterioration.

The recommended resurfacing program identified on pages 69 and 70 is considered to be program specific for the first three years and then serves as a network system for the remaining seven (7) years under consideration. The priority rating system employed is as follows:

### Resurface

<u>Priority</u>	<u>Definition</u>
1 -	Pavement segments in need of immediate repair or resurfacing.
2 -	Pavement segments in need of major maintenance or resurfacing in near future.
3 -	Pavement segments in need of minor maintenance.
4 -	Pavement segment does not need repair or maintenance.
5 -	Pavement segment has recently been resurfaced.

A general summary of the ratings and resurface priorities for the mainline pavement is shown in Tables 1 and 2. In order to provide for uniformity of



inspection and to aid in maintenance of traffic during construction, break points separating the various inspection segments were established at interchange locations and maintenance area boundaries throughout the Toll Road. A more detailed breakdown of the ratings and resurface priorities between these break points is shown in Tables 3 and 4.

It should be noted that, in general, the Toll Road pavement easily meets or exceeds minimum standards for pavement on an interstate system. The evaluations and ratings in this section are based on standards that RQAW feels are warranted and recommended for a Toll Facility of this type.

B. Pavement Distress Types

The following forms of pavement distress were observed in one or more sections of pavement during the inspection conducted on August 10 & 11, 2005:

**COMPOSITE OR FLEXIBLE PAVEMENT**

- |               |                                 |
|---------------|---------------------------------|
| a. Raveling   | f. Random or Alligator Cracking |
| b. Patching   | g. Transverse or Block Cracking |
| c. Holes      | h. Longitudinal Joint Cracking  |
| d. Settlement | i. Edge Cracking                |
| e. Blow-ups   |                                 |

**JOINTED CONCRETE PAVEMENT**

- a. Settlement
- b. Joint or Crack Spalling
- c. Blow-ups
- d. Transverse Cracks
- e. Longitudinal Cracks

Descriptions and definitions of the above forms of pavement distress can be found in the INDOT Pavement Condition Data Collection Manual (August, 1992) developed by Road Management. The severity levels of each of the pavement distresses were determined as low, moderate or high in accordance with the Pavement Condition Data Collection Manual. From this data, RQAW estimated a total percentage of deterioration of the pavement that was used to establish resurface priorities as shown in Tables 3 through 6.

The following is a complete list of distress types:

<u>ASPHALT PAVEMENT DISTRESS</u>	<u>JOINTED CONCRETE PAVEMENT DISTRESS</u>
<u>TYPES</u>	<u>TYPES</u>
*1. Raveling	13. D-Cracking
*2. Patching	*14. Patching
*3. Holes	15. Faulting
*4. Settlements	*16. Settlement
*5. Random or Alligator Cracking	*17. Joint or Crack Spalling
*6. Transverse or Block Cracking	18. Blow-ups
*7. Longitudinal Joint Condition	*19. Transverse Cracks
*8. Edge Cracking	*20. Longitudinal Cracks
9. Widening Cracks	21. Corner Breaks
*10. Blow-ups	22. Pumping
11. Pumping	23. Maintenance Performed
12. Maintenance Performed	
<b>* Denotes distress observed during Toll Road Inspection</b>	

#### C. Video/Computer Pavement Analysis

In addition to the visual inspection of the pavement by RQAW, the Toll Road is continuing to utilize INDOT's video/computer inspection and analysis of the mainline pavement on an annual basis. The analysis is based on the INDOT Pavement Management System (PMS) and provides a Pavement Condition Rating (PCR) in accordance with INDOT's Pavement Condition Data Collection Manual. Also, the system measures Rutting and determines the International Roughness Index (IRI) for the pavement.

The PCR is a measure of the distresses on a pavement surface. These distresses include Transverse Cracking, Longitudinal Cracking, Block Cracking, etc. The pavement is reviewed at each milepost for 500 feet, the distresses are rated for severity and quantity, and a value is determined. These values (deduct points) are subtracted from 100 to determine the PCR. The rating goes from 0 to 100 with excellent pavements in the 90 to 100 range, good pavements in the 80 to 90 range, fair pavements in the 70 to 80 range, and poor pavements below 70.

IRI is a measure of the ride of the pavement. It measures the "bumpiness" of the pavement in terms of inches per mile. The index is setup such that excellent

pavements range between 60 to 100, good pavements range between 100 to 150, fair pavements range between 150 to 200, and poor pavements range over 200.

Rutting is a measurement of ruts in the wheel paths of the pavement. Rutting is most common on bituminous pavements and a severely rutted pavement would have ruts of 0.25 inches or larger. Generally, rutting does not occur on concrete pavement unless it is age is in the range of twenty-five (25) plus years.

Figures 1 through 10 were developed utilizing INDOT's 2005 Toll Road Pavement Data, to be used as a comparison to RQAW's visual inspection of the Toll Road Pavement. A summary of the overall condition of the Toll Road pavement, based on the PCR and PQI values, are shown in Figures 1 and 2, respectively. Figures 3 through 10 represent PCR, IRI, and RUT values at each milepost along the roadway.

In 1998, INDOT began providing this pavement analysis for the Toll Road Pavement on a biennial basis and in 2000 began providing the service annually. RQAW has used the INDOT 2005 Pavement Data as a comparison with a visual inspection in evaluating pavement conditions and resurface priorities.

#### D. INDOT and GAO Requirements for GASB 34 (Roads)

The Indiana Department of Transportation (INDOT) field measures International Roughness Index (IRI), Rut, and Pavement Condition Rating (PCR) to determine the condition of roadway pavements. Since 1998 INDOT uses the Pavement Quality Index (PQI) as the State's primary method to rate pavement conditions for monitoring purposes. The rating established by PQI is a calculated composite index of the above three measured factors and ranges from 100 to 0. Indiana's PQI rating system is used for both asphalt and concrete pavements. (See Section 1.3.B.4 for PQI terms and formula.)

INDOT's Pavement Management System (PMS) provides a Pavement Condition Rating (PCR) and PQI shown in Figures 1 and Figure 2. Based on the INDOT's 2005 Pavement Data, the majority of the pavement is in a fair or better condition. However, there is 2% of the pavement with a PCR in the poor condition and 10% of the pavement with a PQI in the poor condition.

### 2005 PCR CONDITION

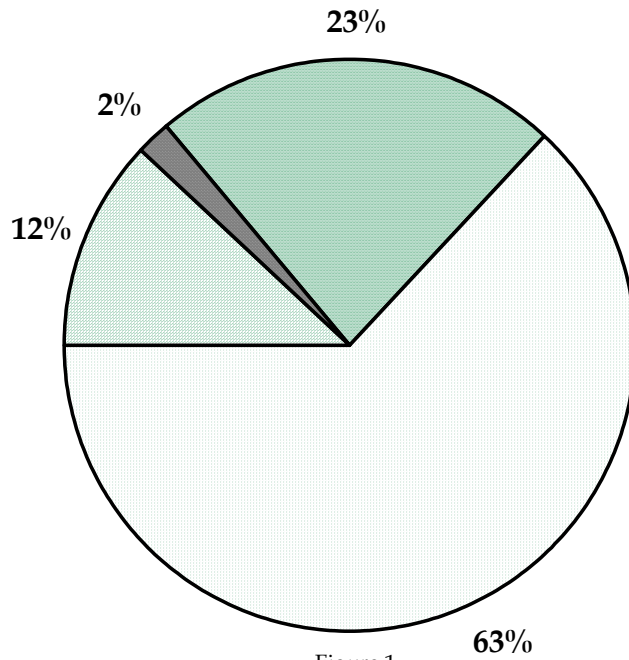


Figure 1

■ PCR > 90    □ 80 < PCR < 89    □ 70 < PCR < 79    ■ PCR < 70

### 2005 PQI

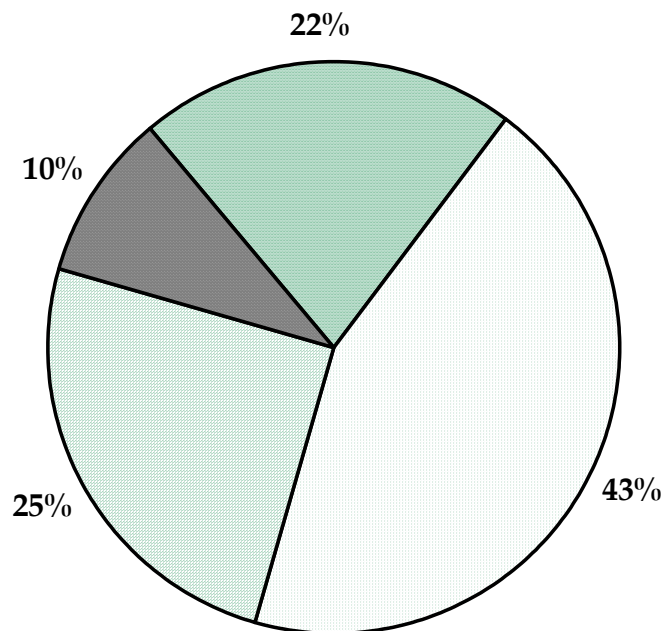


Figure 2

■ PQI > 90    □ 80 < PQI < 89    □ 70 < PQI < 79    ■ PQI < 70

2005 MAINLINE PQI (EB)

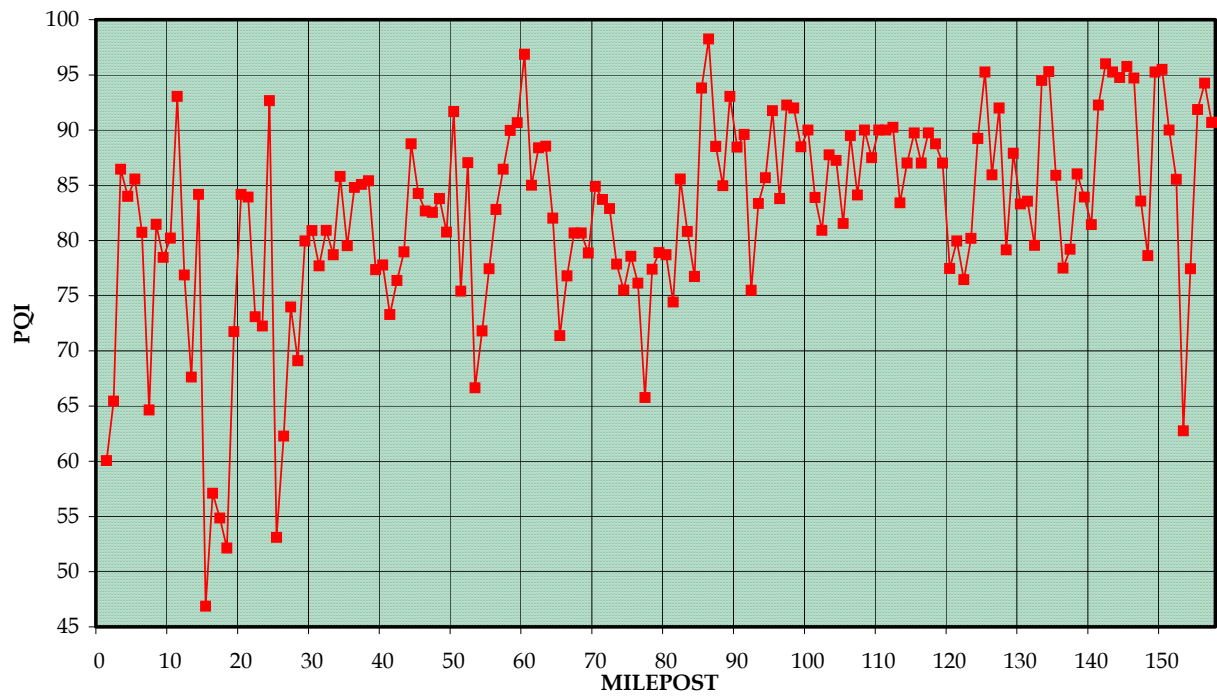


Figure 4

2005 MAINLINE PQI (WB)

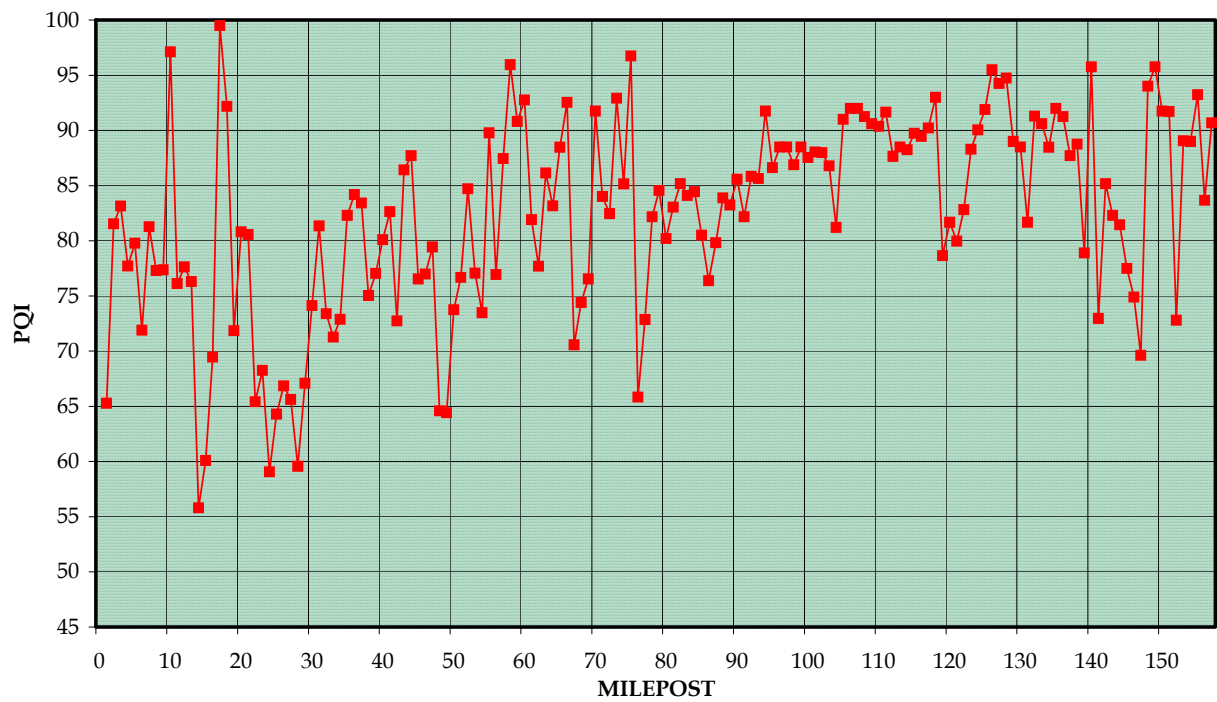


Figure 3

### PAVEMENT CONDITION RATING (EB)

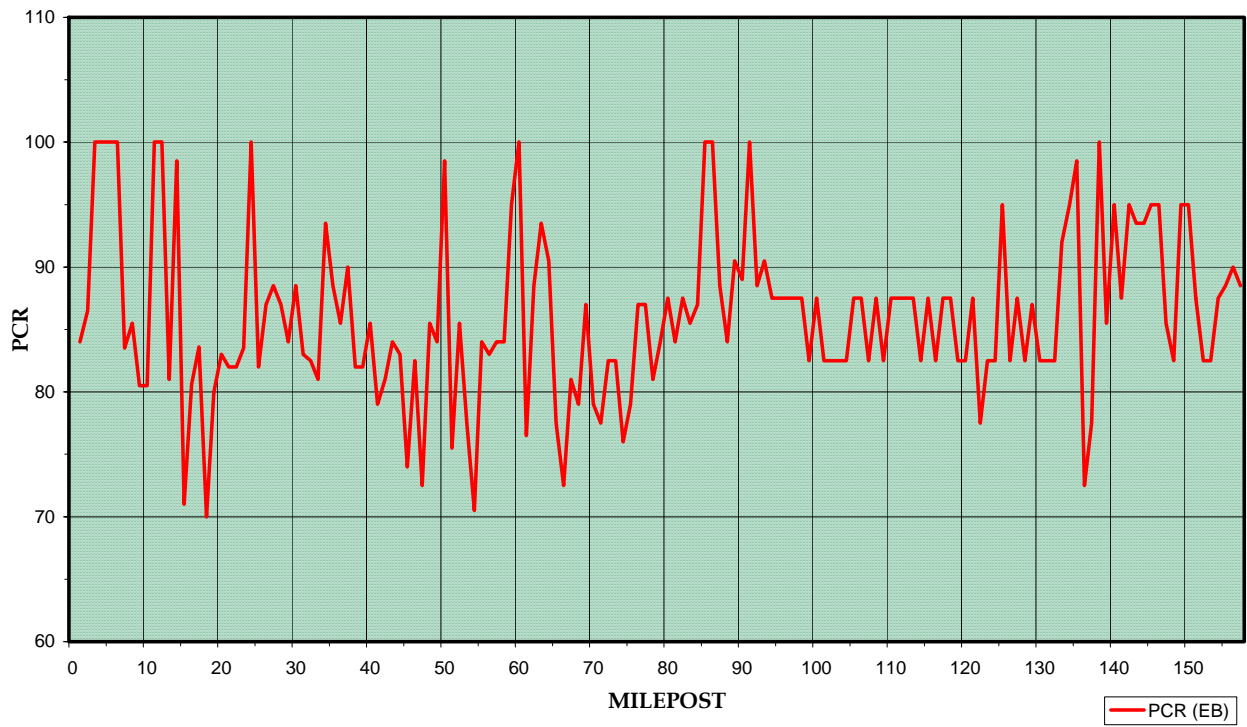


Figure 5

### PAVEMENT CONDITION RATING (WB)

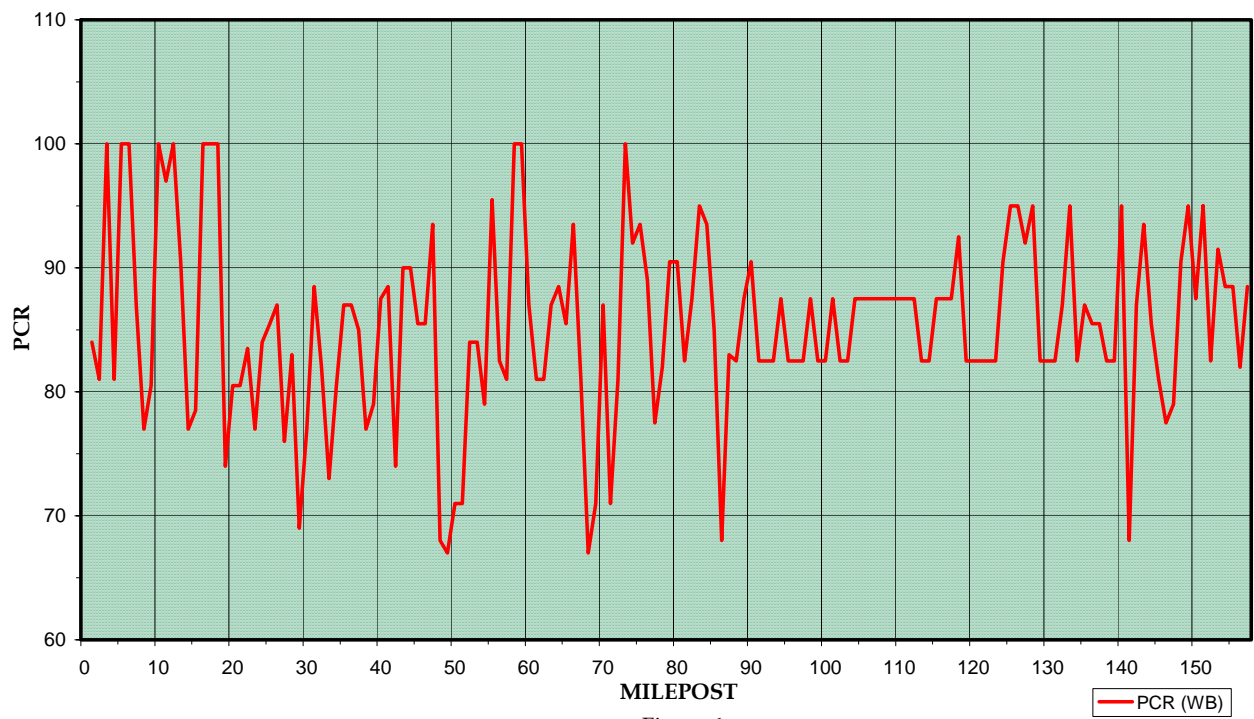


Figure 6

## INTERNATIONAL ROUGHNESS INDEX (EB)

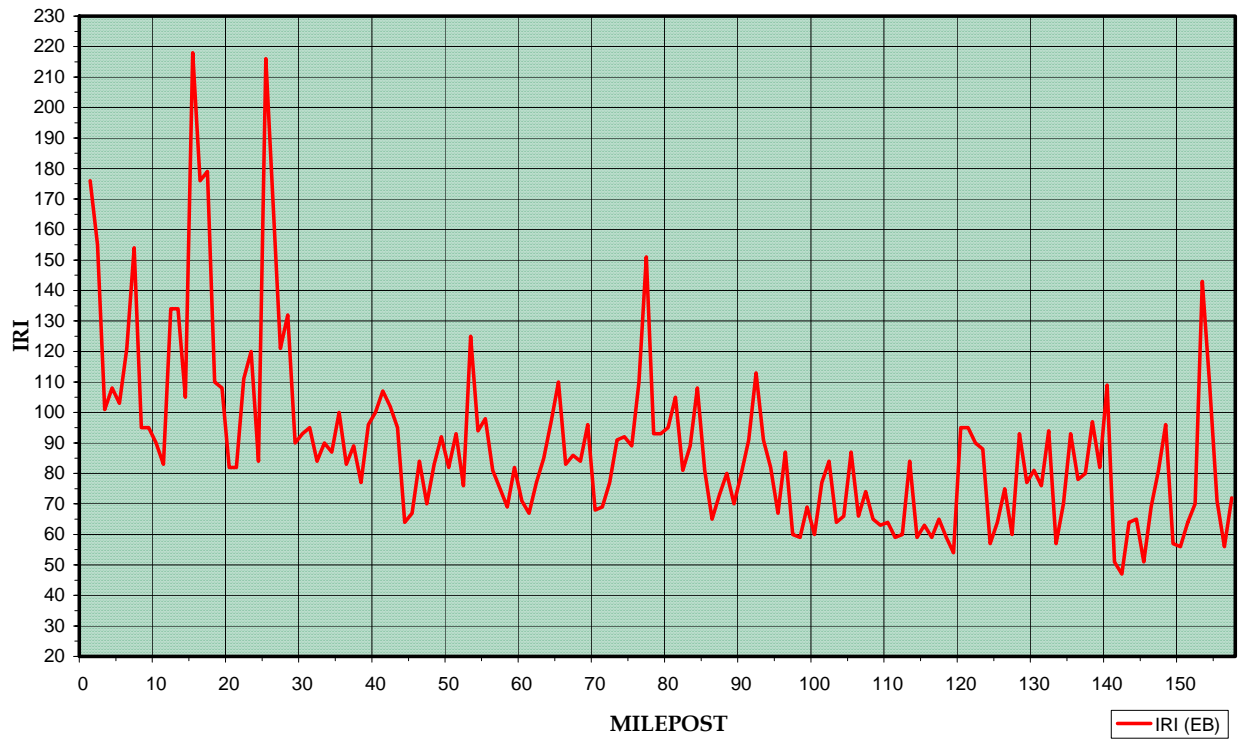


Figure 7

## INTERNATIONAL ROUGHNESS INDEX (WB)

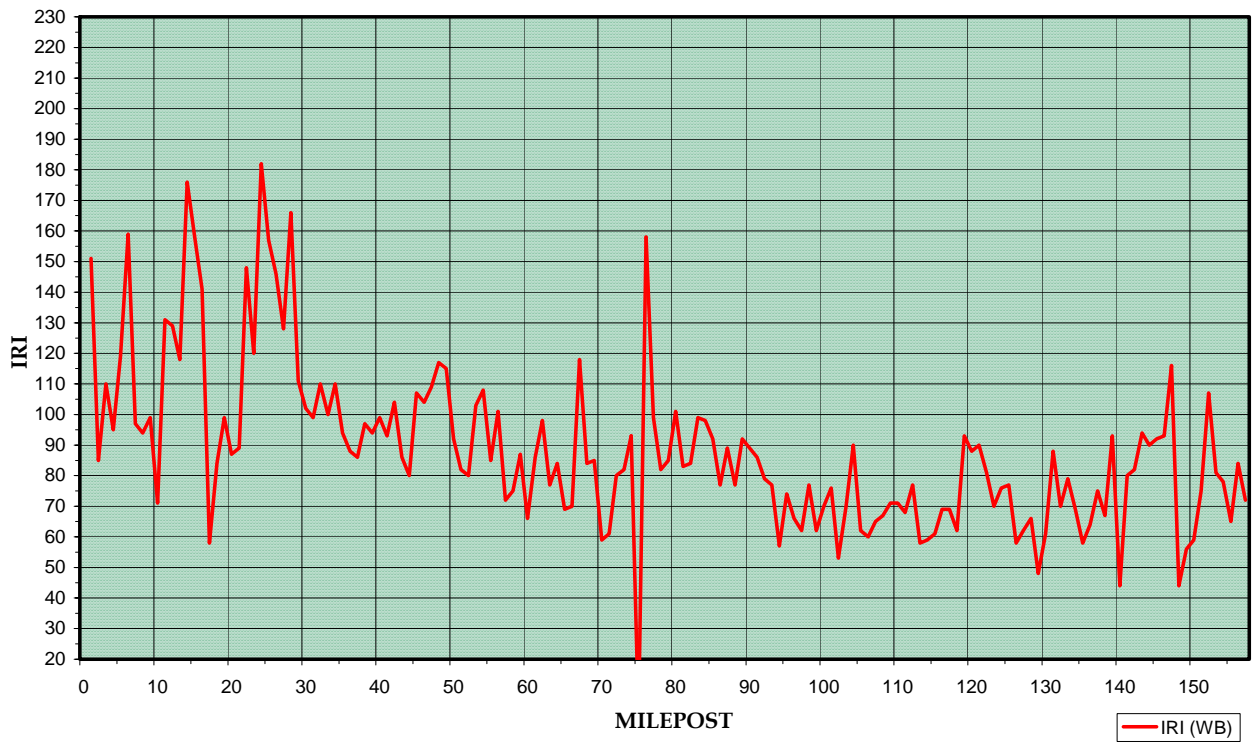


Figure 8



### RUTTING (EB)

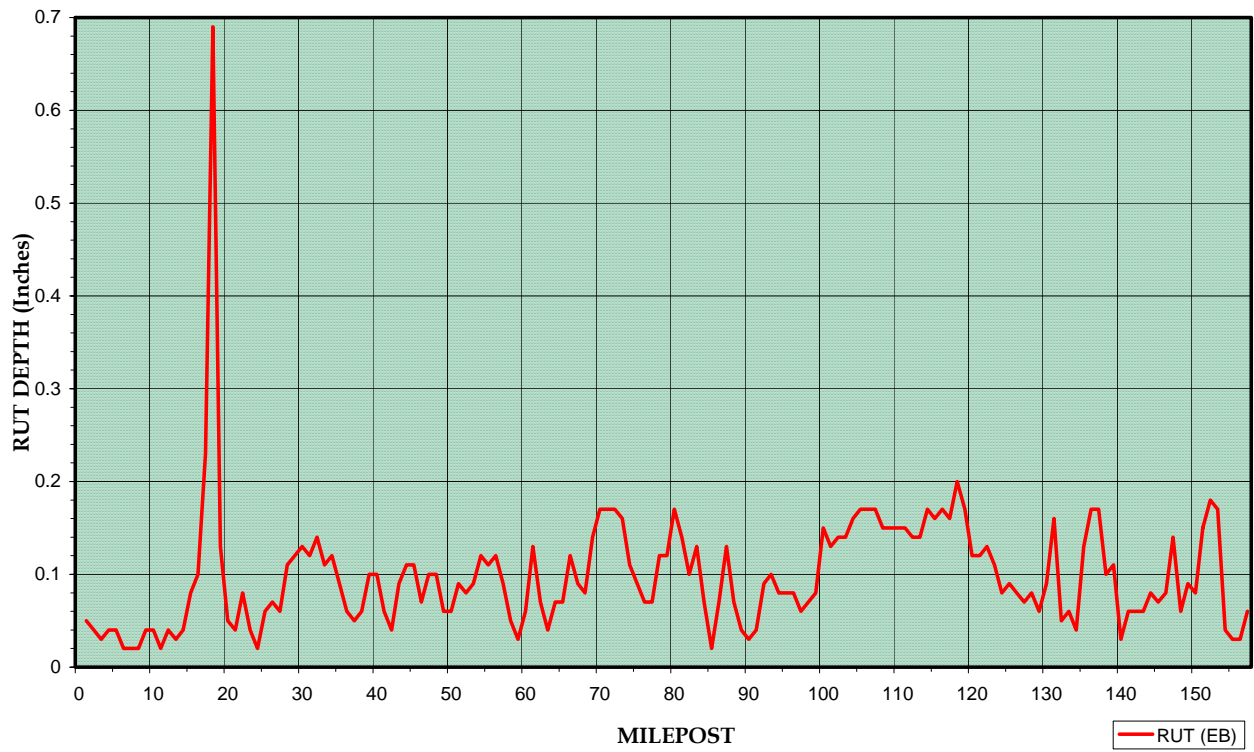


Figure 9

### RUTTING (WB)

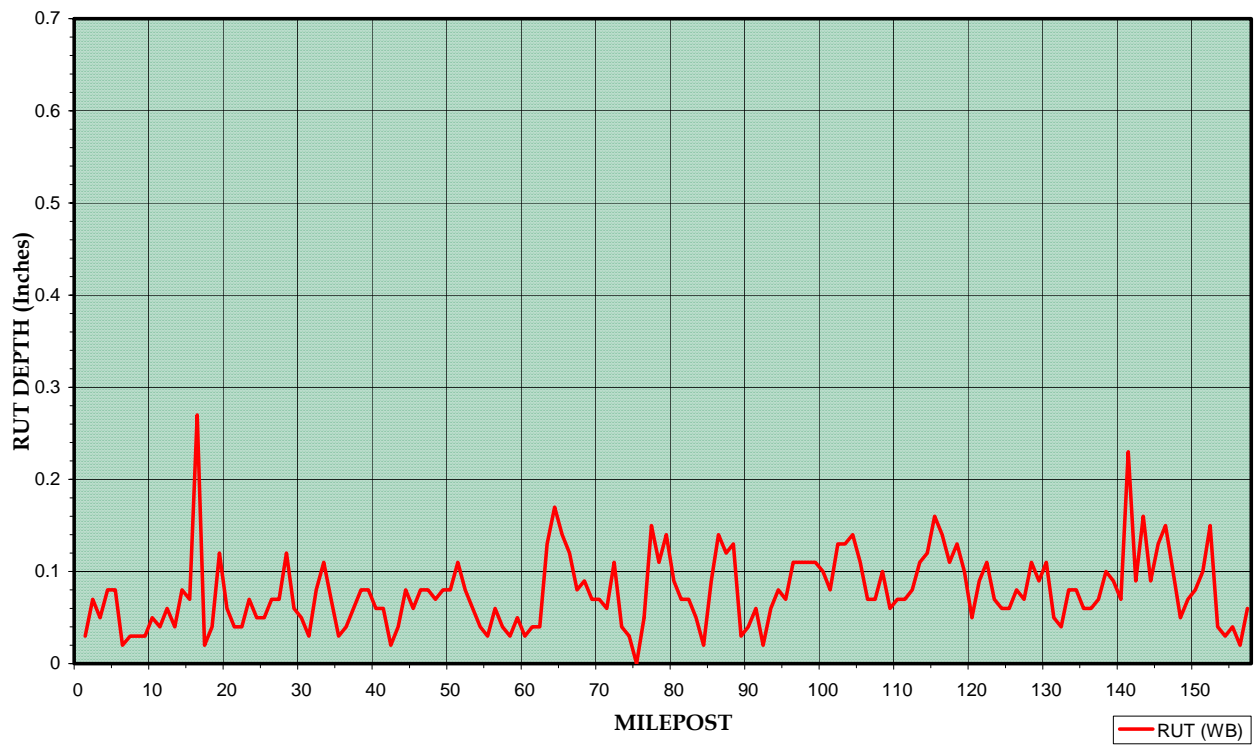
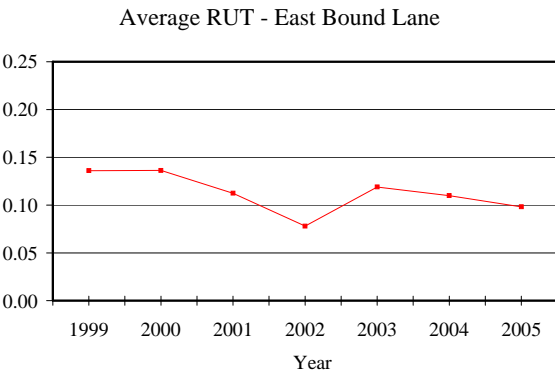
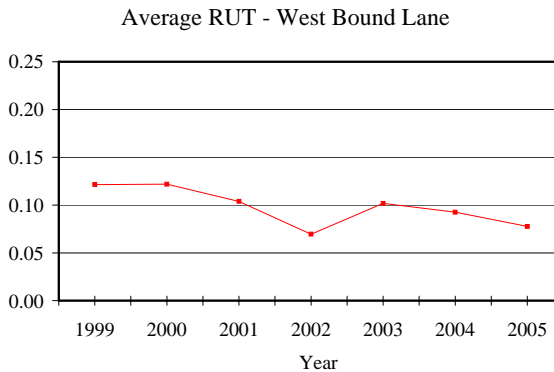
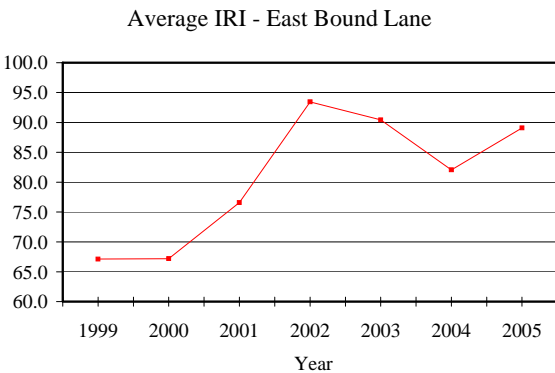
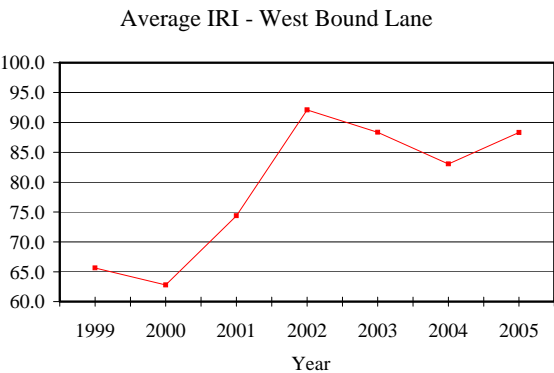
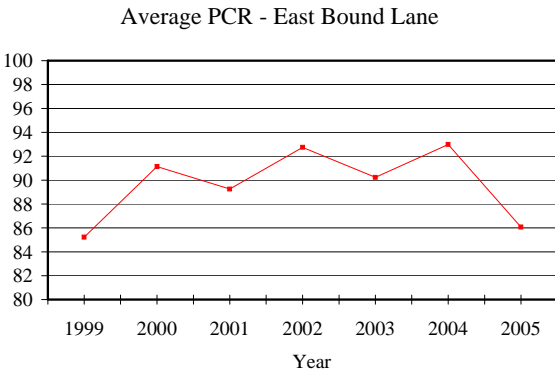
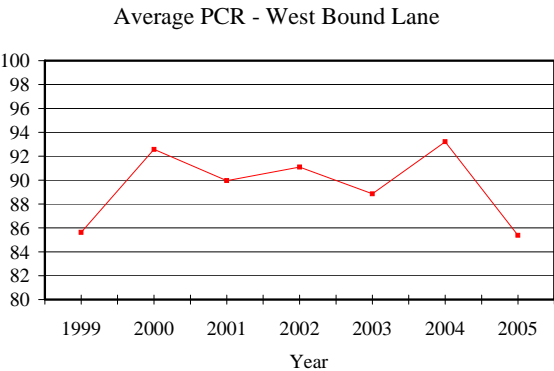


Figure 10

The following charts documents the trends in the PCR, IRI, and RUT values.



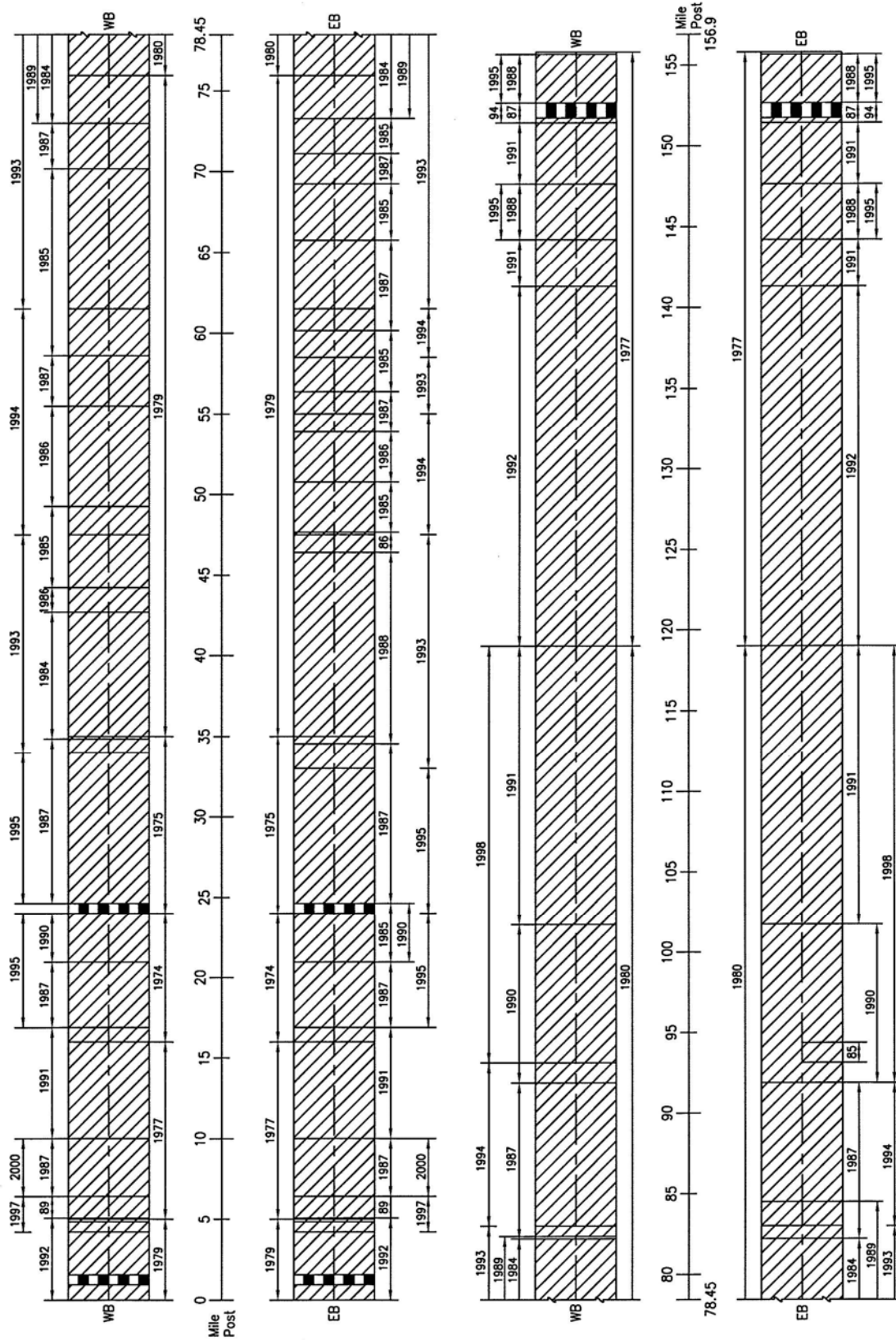
**MAINLINE PAVEMENT**  
**General Condition and Resurface Priority**  
**(Table 1)**

Traffic Direction	Condition	Lane Miles	Resurface Priority*
Eastbound	Excellent	0.0	5
	Good	313.4	3-4
	Average	0.0	2-3
	Poor	0.0	1-2
	Failed	0.0	
<b>TOTAL</b>		<b>313.4</b>	
Westbound	Excellent	0.0	5
	Good	313.4	3-4
	Average	0.0	2-3
	Poor	0.0	1-2
	Failed	0.0	
<b>TOTAL</b>		<b>313.4</b>	
* Priority Rating System: <b>Priority 1 - Highest Priority</b> <b>Priority 5 - Lowest Priority</b>			

**MAINLINE PAVEMENT**  
**Distress and Surface Deterioration**  
**(Table 2)**

Resurface Priority	Eastbound Miles (Lane Miles)	Westbound Miles (Lane Miles)	Total Miles (Lane Miles)
1	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
2	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
3	107.4 (34.3%)	96.8 (30.9%)	204.2 (32.6%)
4	206.0 (65.7%)	216.6 (69.1%)	422.6 (67.4%)
5	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)
<b>TOTAL (Lane Miles)</b>	<b>313.4</b>	<b>313.4</b>	<b>626.8</b>

# PAVEMENT RESURFACE HISTORY



Drawn By: J. Laskowski  
Revised By: RQAW  
Date: 12/20/91  
Date: 11/16/00

**PAVEMENT CONDITION SURVEY - 2005**  
**East Bound Mainline**  
**(Table 3)**

<b>Milepost (MP)</b>	<b>Distress (Severity)(b)) Type a)</b>	<b>Deterioration %</b>	<b>General Condition (c)</b>	<b>Resurface Priority (d)</b>	<b>Comments</b>
0-4.7	6(L), 7(L), 8(L)	60	G	3	Resurf. 2000 - MP 6.4 - 10.1
4.7-6.4	6(M)	35	G	4	
6.4-10.1	6(L)	30	G	4	
10.1-16.7	6(L), 7(L), 8(L)	50	G	3	MP 15.5 to 18.5 Under Construction (Project 2000 Added Lanes)
16.7-20.8	6(M), 7(H), 8(H)	50	G	3	
20.8-24.1	5(L), 6(L), 7(L), 8(L)	40	G	4	
24.1-30.9	5(M), 6(M), 7(M), 8(L)	60	G	3	
30.9-38.9	5(M), 6(M), 7(M), 8(L)	55	G	3	
38.9-47.5	5(M), 6(L), 7(L), 8(L)	40	G	4	
47.5-49.2	6(L)	35	G	4	
49.2-61.8	5(L), 6(L), 7(L)	30	G	4	
61.8-72.4	5(L), 6(M), 7(M), 8(L)	35	G	4	
72.4-76.6	6(L)	40	G	4	
76.6-82.9	5(L), 6(L), 7(L)	40	G	4	
82.9-91.8	5(L), 6(M), 7(L), 8(L)	35	G	4	
91.8-101.2	6(L), 7(L), 10(L)	25	G	4	Resurf. MP 91.8 to 93.0 - 1994 Gen. Cond. -G & Resurf. Prior. 4
101.2-107.1	6(L), 7(L), 10(L)	25	G	4	
107.1-120.5	6(L), 7(L), 10(L)	25	G	4	
120.5-133.2	3(L), 6(L), 7(L), 8(L) *	40	G	4	* W&L Areas - Good Condition (Distress and Severity apply to areas where W&L has not been done).
133.2-143.9	5(L), 6(L), 7(L), 8(M) *	55	G	3	
143.9-156.7	6(L), 7(L), 8(M) *	45	G	3	

Notes

- (a) For Pavement Distress Index, See Page 54.  
(b) L: Low, M: Medium, H: High  
(c) E: Excellent, G: Good, A: Average, P: Poor, F: Failing  
(d) 1: Highest Priority -- 5: Lowest Priority

**PAVEMENT CONDITION SURVEY – 2005**  
**West Bound Mainline**  
**(Table 4)**

<b>Milepost (MP)</b>	<b>Distress Type (a)</b>	<b>(Severity) (b)</b>	<b>Deterioration %</b>	<b>General Condition (c)</b>	<b>Resurface Priority (d)</b>	<b>Comments</b>
0-4.7	6(L), 7(L), 8(L)		60	G	3	Resurf. 2000 – MP 6.4 – 10.1
4.7-6.4	6(M)		35	G	4	
6.4-10.1	6(L)		30	G	4	
10.1-16.7	6(L), 7(L), 8(L)		50	G	3	MP 15.5 to 18.5 Under Construction (Project 2000 Added Lanes)
16.7-20.8	6(M), 7(H), 8(H)		55	G	3	
20.8-24.1	5(L), 6(L), 7(L), 8(L)		50	G	3	
24.1-30.9	6(M), 7(M), 8(L)		55	G	3	
30.9-38.9	3(L), 6(L), 7(L), 8(L), 10(L)		50	G	3	
38.9-47.5	5(L), 6(L), 7(L), 8(L)		40	G	4	
47.5-49.2	6(L)		35	G	4	
49.2-61.8	5(L), 6(L), 7(L), 8(L)		30	G	4	
61.8-72.4	5(L), 6(L), 7(L), 8(L)		35	G	4	
72.4-76.6	6(L), 7(L), 8(L)		50	G	3	
76.6-82.9	6(L), 7(L), 8(L)		40	G	4	
82.9-91.8	5(L), 6(L), 7(L), 8(L)		40	G	4	
91.8-101.2	6(L), 7(L), 10(L)		25	G	4	Resurf. MP 91.8 to 93.0 – 1994 Gen. Cond. - G & Resurf. Prior. 4
101.2-107.1	6(L), 7(L), 10(L)		25	G	4	
107.1-120.5	6(L), 7(L), 10(L)		25	G	4	
120.5-133.2	6(L), 7(L), 8(M) *		40	G	4	* W&L Areas – Good Condition (Distress and Severity apply to areas where W&L has not been done).
133.2-143.9	5(L), 6(L), 7(L), 8(M) *		50	G	3	
143.9-156.7	6(L), 7(L), 8(L) *		40	G	4	

Notes

- (a) For Pavement Distress Index, See Page 54.  
(b) L: Low, M: Medium, H: High  
(c) E: Excellent, G: Good, A: Average, P: Poor, F: Failing  
(d) 1: Highest Priority -- 5: Lowest Priority

## E. Mainline Pavement

On August 10 & 11, 2005, the annual inspection of the mainline pavement, interchange ramps and travel plaza pavement was conducted. Maintenance and Engineering personnel from the Toll Road accompanied RQAW personnel on this inspection. A comparison of the Pavement Condition Rating (PCR) from INDOT's 2004 Pavement Data and 2005 Pavement Data shows the average PCR value to be 93.3 for 2004 and 85.3 for 2005, a decrease of approximately 8.6%. There were no PCR values below 80 in the 2004 pavement data, however there are a few values below 70 in the 2005 pavement data. Therefore, there is a minimal amount of pavement in the poor pavement rating condition category. It should be noted that the 2005 Pavement Data was obtained prior to any of the Wedge and Level work that was done this year. This could be a contributing factor to the lower PCR values that were obtained in 2005. The last major full depth resurfacing was done in 1998. This section typically has PCR values in the low to mid 80's in INDOT's 2005 Pavement Analysis. Only some minimal surface distresses were noted in this section during RQAW's 2005 visual inspection.

The wedge and level work being done at various locations throughout the Toll Road is continuing to improve surface conditions and extend the life of those pavements that are relatively sound with only minor to moderate surface distresses. The program has been effective in maintaining PCR values in the 70 to 100 range, with a minimal amount below 70 and a large percentage at 80 or above, for pavements that would otherwise be showing more deterioration. With these surface improvements, a higher average PCR value is being maintained throughout the roadway.

About 90% of the mainline pavement was resurfaced during an extensive resurfacing program from 1991 to 1995, and therefore, there were no major resurfacing projects on the mainline in 1996. In 1997, a very minimal amount of mainline resurfacing was done. Some resurfacing work was done on interchange ramps at various Toll Plazas, overlaying the original concrete pavement with asphalt. A major mainline resurfacing project from MP 93 to MP 119.5 (26.5 miles) was undertaken in 1998. This project included milling the existing asphalt down to the existing concrete pavement, crack and seating the concrete, and overlaying it with asphalt. Also included in this project, were

miscellaneous ramp overlays, concrete lane and island reconstruction at toll plazas and paving of truck and commuter parking lots.

Beginning in 1999 and through 2004, no full depth resurfacing projects were done. The wedge and level program began in 1999 with one (1) contract being let for work to be done (primarily in the driving lane) at various locations on the mainline throughout the length of the Toll Road. From 2000 to the present, two (2) contracts were let each year for wedge and level work to be done at various locations along the Toll Road in both the traveled lane and the passing lane.

Many of these contracts through this period of time included the resurfacing of various interchange ramps and the paving of truck parking and commuter parking lots at various locations along the Toll Road. Other projects completed from 1999 to 2004 included Toll Plaza improvements such as the reconstruction of the concrete lanes and islands at various locations. Also, the pavement program included the sealing of various parking lots throughout the Toll Road.

Again in 2005, no full-depth resurfacing projects were done. There were two (2) wedge and level projects completed in FY 2005. The first contract was completed in the fall of the 2004 construction season and the second contract was done in the spring of the 2005 construction season. The wedge and level work in the past years typically was done in the travel and passing lanes. As part of the 2005 work, some of the wedge and level work is also being done on the shoulders at various locations.

The following portions of the Toll Road roadway are recommended for resurfacing during FY 2006:



### FISCAL YEAR 2006

Priority	Description	From MP	To MP	Distance (Lane Miles)	Estimated Cost (2006 Dollars)
3	Resurface EBL & WBL	0	4.7	18.8	\$ 1,900,000
3	Resurface Ramps - MP 31			-	600,000
3	Resurface Ramps - MP 49			-	600,000
-	Relocation of Mainline Barrier Toll Plaza - MP 24			-	3,500,000
<b>Miscellaneous Roadway Improvements</b>					
-	Pavement Stripping	0	157	-	\$ 500,000
-	Miscellaneous Sign Replacement	-	-	-	350,000
-	Miscellaneous Lighting	-	-	-	250,000
<b>FY 2006 - TOTAL</b>					<b>\$ 7,700,000</b>

The segments recommended for resurfacing during the next three years are listed in the tables below. The recommendations for the remaining seven (7) years of the Ten Year Needs Study are based on a network system analysis only. A summary of the Ten Year Resurface Program can be found in the Ten Year Needs Summary (Table 7) on page 116.

### FISCAL YEAR 2007

Priority	Description	From MP	To MP	Distance (Lane Miles)	Estimated Cost (2007 Dollars)
3	Resurface EBL & WBL	133.2	143.9	42.8	\$ 4,200,000
3	Resurface Ramps - MP 39			-	500,000
-	Relocation of Mainline Barrier Toll Plaza - MP 24			-	4,000,000
<b>Miscellaneous Roadway Improvements</b>					
-	Pavement Stripping	0	157	-	\$ 400,000
-	Miscellaneous Sign Replacement	-	-	-	300,000
-	Miscellaneous Lighting	-	-	-	200,000
<b>FY 2007 - TOTAL</b>					<b>\$ 9,600,000</b>

### FISCAL YEAR 2008

Priority	Description	From MP	To MP	Distance (Lane Miles)	Estimated Cost (2008 Dollars)
3	Resurface EBL & WBL	24.1	34.0	39.6	\$ 5,600,000
3	Resurface Ramps - MP 144			-	500,000
-	Eastpoint Mainline Barrier Toll Plaza - MP 153			-	1,500,000
<b>Miscellaneous Roadway Improvements</b>					
-	Pavement Stripping	0	157	-	\$ 500,000
-	Miscellaneous Sign Replacement	-	-	-	350,000
-	Miscellaneous Lighting	-	-	-	250,000
<b>FY 2008 - TOTAL</b>					<b>\$ 8,700,000</b>

### FISCAL YEAR 2009

Priority	Description	From MP	To MP	Distance (Lane Miles)	Estimated Cost (2009 Dollars)
3	Resurface EBL & WBL	10.1	16.7	26.4	\$ 3,000,000
3	Resurface EBL & WBL	120.5	133.2	50.8	5,600,000
3	Resurface Ramps - MP 39			-	500,000
<b>Miscellaneous Roadway Improvements</b>					
-	Pavement Stripping	0	157	-	\$ 450,000
-	Miscellaneous Signs and Lighting	-	-	-	600,000
<b>FY 2009 - TOTAL</b>					<b>\$ 10,050,000</b>

As part of the FY 2004 Wedge and Level Program (work to be completed in the 2003 construction season), the Toll Road started using a new technology called Stone Matrix Asphalt (SMA). SMA, developed in Europe, and has been used there for a number of years, has proven to be a cost effective mixture for high traffic volumes. The SMA mixtures have been shown to be more resistant to

permanent deformation (rutting) than conventional Hot Mix Asphalt (HMA). Also, the SMA is proving to be more durable than HMA and has excellent skid resistant properties.

The Toll Road is also investigating another new material called NovaChip which is an ultra thin bonded wearing course. The NovaChip paving process places a thin coarse aggregate hot mix over a NovaBond polymer asphalt membrane. This process allows for a thinner overlay (3/8" to 3/4" thick) and provides excellent bonding capabilities to both existing asphalt and concrete pavements. With this thinner application, the need for milling existing surfaces can be greatly reduced or totally eliminated on many resurfacing projects. The NovaChip and the SMA both have similar characteristics in providing good durability and skid resistance properties. Also, both surfaces provide reduced hydroplaning and reduced back spray giving greater visibility in wet weather conditions.

In order to achieve maximum possible life of asphalt pavements, a good crack sealing program is essential. The Toll Road Engineering and Maintenance Personnel are to be commended for their continual ongoing and extensive joint and crack sealing program on the Toll Road pavement. For the past eight (8) years, they have been utilizing AE90-S asphalt joint sealing material for the sealing of cracks and joints in asphalt pavements. In 1999 they began using crumb rubber on concrete pavements and bridges. These materials continue to function well for this program. Toll Road Personnel continue to look at new materials, as they become available, to be used in the sealing program.

#### F. Interchange Ramps & Toll Plaza Pavement

RQAW and Toll Road Personnel also inspected interchange ramp pavements on August 10 & 11, 2005, as part of the annual inspection program.

The interchange ramps are in reasonably good condition overall, however about 50% of the ramps have a resurface priority of one (1), two (2) or three (3), with the deterioration rate ranging from 50% to 90%. The General Condition and Resurface Priority ratings shown in Table 5 reflect the conditions of the ramps between the tollbooth area and the mainline of the Toll Road and old concrete pavement outside the recently constructed lanes at the barrier Toll

Plazas. The condition of the concrete lanes and islands at the tollbooths is covered in the Comments column in Table 5. A program for reconstructing interchange ramp pavements has been ongoing over the past few years and should continue with those interchanges listed as having the highest deterioration rates in Table 5 of this report, being given top priority. The following is a summary of ramp conditions:

# PAVEMENT CONDITION SURVEY - 2005

## Interchange Ramps

(Table 5)

Toll Plaza	MP	Distress Type (a) (Severity) (b)	Deterioration %	General Condition (c)	Resurface Priority (d)	Comments
Indianapolis Blvd.	0	6(L), 7(M), 17(M), 19(M)	70	A	3	(e)
Westpoint	1	17(M), 19(M), 20(M)	90	P	1	(k),(n)
S.R. 912	3	6(L), 7(L)	30	G	4	
Calumet Ave. (EB Entr.)	5	6(M), 7(M), 8(M)	85	A	2	(g)
Calumet Ave. (WB Exit)	5	6(L), 7(L)	30	G	4	(j)
Cline Ave.	10	5(L), 6(M), 7(L), 8(M)	40	G	4	(l)
Gary West	14A	6(M), 7(L), 17(M),	40	G	4	
Broadway	14B	17(M), 19(M), 20(M)	90	P	1	
Gary East	17	6(L)	15	E	5	(l),(i)
Lake Station	21	6(L), 8(L)	25	G	4	(k)
Portage	23	6(L)	15	E	5	(k)
Mainline Barrier	24	14(L), 17(M), 19(M), 20(M)	90	P	1	(k),(n)
Valparaiso-Chesterton	31	5(L), 6(M), 7(M), 8(L)	70	A	3	(f)
Michigan City	39	6(M), 7(M), 8(L)	70	A	3	
LaPorte	49	6(M), 7(H), 8(M)	70	A	3	(f)
South Bend West	72	1(L), 5(L), 6(M), 7(L)	45	G	3	(f),(m)
So. Bend-Notre Dame	77	6(M), 7(L)	55	G	3	(f)
Mishawaka	83	6(L)	40	G	4	(f)
Elkhart	92	6(L), 7(L), 8(L)	25	G	4	
Elkhart East	96	20(L)	25	G	4	
Bristol	101	6(L)	35	G	4	
Middlebury	107	5(L), 6(L), 7(L), 8(L)	35	G	4	
Howe-LaGrange	121	6(L)	35	G	4	(f)
Angola	144	6(M), 7(L), 8(L)	55	G	3	(f)
Eastpoint	153	16(M), 17(M), 19(L), 20(L)	80	A	2	(h)

### Notes

- (a) For Pavement Distress Index, See Page 54
- (b) L: Low, M: Medium, H: High
- (c) E: Excellent, G: Good, A: Average, P: Poor, F: Failing
- (d) 1: Highest Priority, 5: Lowest Priority
- (e) Joint and crack spalling on eastbound entrance ramp only. WB Exit Ramp reconstructed in 2001.
- (f) Gore areas at acceleration and deceleration lanes are severely deteriorating with moderate to heavy longitudinal and transverse cracking, edge cracking and some potholes developing.
- (g) EB Entrance concrete lanes and islands were reconstructed in 2002, including ramp from US 41 to the Tollbooths. (Rating shown above is for the remaining portions of the EB Exit and Entrance Ramps).
- (h) Settlement in far north lane at Tollbooths around treadle and sidewalk around tunnel access.
- (i) Interchange reconstructed in 2003 as part of Project 2000, MP 17 Interchange Modifications. All ramps were reconstructed with new concrete pavement, except small portions of the Toll Road EB and WB Entrance and Exit Ramps which will be reconstructed as part of the Project 2000 Additional Lanes Project (MP 15.5 to MP 18.7) currently under contract.
- (j) Concrete pavement lanes and islands at Tollbooths new in 1999.
- (k) Concrete pavement lanes and islands at Tollbooths new in 2000.
- (l) Concrete pavement lanes and islands at Tollbooths new in 2001.
- (m) Concrete pavement lanes and islands at Tollbooths new in 2002.
- (n) Pavement Condition Rating and Resurface Priorities shown above reflect the condition of the old concrete pavement outside the limits of the newly constructed concrete lanes and islands.

## G. Travel Plaza Pavement

During the annual pavement inspection August 10 and 11, 2005, the pavements at the Travel Plazas were reviewed as well. All of the Travel Plazas were resurfaced during the 1994 and 1995 constructions seasons and remain in good condition. In 1999 the Toll Road began contracting out the sealing of Travel Plaza pavements and other major parking facilities along the roadway. All Travel Plaza pavements throughout the Toll Road were sealed in 2002, except Travel Plazas 5N and 5S. This Plaza was scheduled for milling and resurfacing as part of the wedge and level program for FY 2003, and was completed in the latter part of the 2002 construction season. Travel Plazas 1's and 5's were sealed in 2004. Travel Plazas 3's, 7's and 8's were all scheduled for wedge and level during the 2004 construction season. However, the wedge and level work was done only at Travel Plazas 8N and 8S, which included the exit and entrance tapers. The wedge and level work at Travel Plaza 7's was postponed until FY 2005 or FY 2006 until water line reconstruction is completed in late 2005. Resurfacing of Travel Plazas 1's and 3's was included in the wedge and level contract being done during the latter part of the 2005 construction season. Due to the high visibility and extensive patron usage of these areas, RQAW concurs with the efforts to upgrade the Travel Plaza pavements as needed.

Toll Road officials are continuing to monitor the parking facilities at the Travel Plazas throughout the Toll Road. Truck parking areas at Travel Plazas 1 and 3 were expanded in 1995 and 1996 respectively. Due to the heavy demand for truck parking, in 1997 through 1999 the Toll Road reopened previously closed Travel Plazas 2N and 2S (MP 37.5) and 6N and 6S (MP 108) to provide much needed additional truck parking. These Plazas were expanded and resurfaced and opened for trucks only. Initially the Toll Road provided only minimal services at these facilities, however in late 2000 the Toll Road upgraded them by constructing pit-toilets to replace the portable toilets originally provided and also installed high-mast lighting in the truck-parking areas.

Truck parking areas at Travel Plaza 3N and 3S were expanded considerably in 1996 and the additional truck parking at Trucks Only Travel Plazas has helped to ease the situation at 3S, however overflow conditions still occur at this location. In 1999 the Toll Road was able to purchase additional land adjacent to this Plaza, which will provide for future expansion of this facility as needed.

The following is a summary of pavement conditions at the Travel Plazas:

## PAVEMENT CONDITION SURVEY - 2005

### Travel Plaza - Parking Lots

(Table 6)

Travel Plaza	MP	Distress Type (a) (Severity) (b)	Deterioration %	General Condition (c)	Resurface Priority (d)	Comments
<b><u>Eastbound</u></b>						
TRP-1S	21.7	W&L 2005	---	E	5	
TRP-2S (Trucks Only)	37.5	3(M), 4(M), 5(M)	65	A	3	(e)
TRP-3S	55.9	W&L 2005	---	E	5	(f)
Dist.11 ISP	72.9	5(L)	55	G	3	
TRP-5S	90.0	5(M)	60	G	3	(f)
TRP-6S (Trucks Only)	108.0	2(M), 3(M), 4(M), 5(M)	65	A	3	(e)
TRP-7S	125.8	5(M)	60	G	3	(f)
TRP-8S	145.7	W&L 2004	-----	E	5	(f)
<b><u>Westbound</u></b>						
TRP-1N	21.7	W&L 2005	60	E	5	
TRP-2N (Trucks Only)	37.5	3(M), 4(M), 5(M)	65	A	3	(e)
TRP-3N	55.9	W&L 2005	60	E	5	(f)
TRP-5N	90.0	5(M)	60	G	3	(f)
TRP-6N (Trucks Only)	108.0	2(M), 3(M), 4(M), 5(M)	65	A	3	(e)
TRP-7N	125.8	5(M)	60	G	3	(f)
TRP-8N	145.7	W&L 2004	---	E	5	(f)

### Notes

- (a) For Pavement Distress Index, See Page 54
- (b) L: Low, M: Medium, H: High
- (c) E: Excellent, G: Good, A: Average, P: Poor, F: Failing
- (d) 1: Highest Priority, 5: Lowest Priority
- (e) Truck parking only - Services provided includes pit toilets installed in 2000, phones and high-mast lighting. No other services provided.
- (f) Gore areas at acceleration and deceleration lanes are severely deteriorating with moderate to heavy longitudinal and transverse cracking, edge cracking and some potholes developing.

#### H. Proposed Safety Improvements

The Toll Road Engineering and Maintenance Personnel are continuing to monitor the number of deer killed on the roadway throughout the corridor. The deer kill is as listed below:

<b>Fiscal Year</b>	<b>Total Deer Kill</b>
1999	696
2000	634
2001	605
2002	787
2003	676
2004	722
2005	757

The large number of deer-vehicle accidents continues to be a concern to Toll Road Officials. Deer-vehicle conflicts frequently cause extensive damage to vehicles and in many cases can cause personal injury to drivers. The concern is not only about the costs of these accidents, but more importantly, to be able to minimize this hazardous situation and to improve safety to the motoring public.

The Toll Road installed deer reflectors in various test sections along the Toll Road in 1998. The test locations were selected in areas where records showed a high deer-kill in the past. While initially there was a slight reduction in deer-vehicle conflicts, later on during the four (4) year test period there were substantial increases in the deer-kill in the areas where the reflectors were installed. Information collected throughout the test period was relatively inconclusive as to the effectiveness of using deer reflectors to reduce the number of deer-vehicle accidents along the Toll Road.



In an ongoing attempt to reduce deer-vehicle conflicts, the Indiana Toll Road in cooperation with the Indiana Department of Transportation (INDOT) Research Division, Purdue University and the University of Montana are testing an animal detection/warning system. This system was installed between MP 130 to MP 142 in FY 2002 and it utilizes radio frequency transmitters and receivers to send a beam parallel to the roadway. If an animal, such as a deer, breaks the beam, flashing yellow warning lights are turned on and flash for two minutes to warn oncoming motorists.

The system is 100% solar powered and each mile of the test area operates independently from the other locations. Each system is connected to a cell phone for remote monitoring, checking and data collection. The system was activated in 2004. The following documents the deer kill between MP 130 and MP 142 over the past several years:

<b>Fiscal Year</b>	<b>Deer Kill Between MP 130 and MP 142</b>
1999	94
2000	104
2001	90
2002	112
2003	94
2004	103
2005	104

While it initially appears that the system is producing negligible results, it is important to gather more data over the coming years in order to determine the effectiveness of the system.

## **2.3    GUARDRAIL**

A small portion of the guardrail that is attached to bridges carrying traffic on local roads over the Toll Road is in poor condition. While the Toll Road is not responsible for either guardrail or pavement on these bridge approaches, the Toll Road does notify local agencies when accident damage repairs are needed or when guardrail conditions are poor. Guardrails have been replaced on local roads by either local agencies or the Toll Road throughout the corridor with the exception of those structures in Lake County. As the Toll Road repair and rehabilitate these county road bridges going over the Toll Road, they will be replacing the guardrail at the approaches and bringing them up to current standards.

In 2001 new guardrail standards were adopted by INDOT, based on the National Cooperative Highway Research Program (NCHRP) Report 350, "Recommended Procedures for the Safety Performance Evaluation of Highway Features". The Toll Road has upgraded guardrail throughout the corridor in order to comply with the new standards. As part of this upgrade, they have installed REACT-350 crash cushions as end treatment on approach guardrails, throughout the Toll Road. This system replaces all of the various types of attenuators and other end treatments that were used in the past.

No major replacement of mainline guardrail was done in FY 2005. However, each bridge contract does include replacing the entire guardrail within the contract limits

Two (2) ongoing maintenance contracts were let in 2005 for the entire length of the Toll Road to replace and repair damaged guardrails. One (1) contract covers the west half of the Toll Road from MP 0 to MP 73 and the other contract covers the east half from MP 73 to MP 157. With this maintenance contract, damaged guardrails can be repaired or replaced much more quickly and efficiently to better maintain the safety features of the roadway. As the Toll Road continues to replace guardrail, they will strive to comply with all State and Federal Guidelines.

## **2.4    FENCE**

The limited access fence is in generally good repair, but continues to show signs of aging. It is recommended that smaller sections be repaired when damaged in order to keep pedestrians and animals from entering the right-of-way.

In FY 86, the Toll Road District initiated a complete fence replacement program. It is recommended that this program be continued, but at a reduced rate until the program is complete.

At various locations where the adjacent land use is either predominantly commercial or residential, the Toll Road has been replacing the farm field type right-of-way fence with chain link type fence for the past four (4) or five (5) years. Also, they are replacing the fence around the Travel Plazas and Toll Plazas with chain link type fence in order to increase security in these heavy traffic areas. Some fencing has been replaced during the past year at various locations along the Toll Road.

The Toll Road currently has a total of 349 miles of fence along its existing right-of-way. In FY 2005 there were no major fence replacement or maintenance contracts. However, a fence contract is planned for FY 2006.

## **2.5 BUILDINGS**

### **A. Building Inspection**

In accordance with inspection schedule on August 3 and 4, 2005, a detailed inspection was conducted of all the buildings in Group D between MP 115 and MP 156.7. A staff member of the Indiana Toll Road District Building Maintenance Department accompanied RQAW personnel throughout this inspection. A list of deficiencies was forwarded to the Indiana Toll Road after the inspections.

The inspections were conducted in such a manner as to point out building deficiencies and maintenance items requiring attention in order to continue the high quality condition of the building components. In addition to these inspections, RQAW personnel provided spot inspections throughout the length of the Toll Road during the year. The general findings of these inspections indicate that the buildings are in good condition.

### **B. Building Recommendation**

1. The toll booth canopy replacement program for the 1980 canopies is complete except for MP 24. This canopy at this location should be monitored annually until this Toll Plaza is either relocated or removed.

2. Remove limestone chimneys on 1950's utility buildings down to two (2) feet above the existing roof level and top with a metal chimney cap.
3. Consideration should be given to removing aluminum cladding on the 1980 Toll Plaza service buildings and replacing it with a limestone veneer.
4. RQAW understands that the City of Elkhart is extending water and sewer lines to the new school near the Administration Building. If these utilities are extended, RQAW recommends that the Indiana Toll Road connect the Administrative Building and the Elkhart Maintenance Area to these city utility extensions.
5. As mentioned in the previous annual reports, RQAW was asked by the Administration Building staff to help them in preparing a master plan building survey of the Indiana Toll Road Administration Building. The purpose of this survey is to determine space needs which have changed as a result of technology and shift in size of various departments. Miscellaneous building rehabilitation at the Administration Building has occurred over the years without the benefit of a master plan for the future. RQAW has completed the master plan to be augmented in four phases. Phase No. 1 -Construction is nearing completion; Phases 2 through 4 should be undertaken as funding becomes available. As a result of this rehabilitation, the Indiana Toll Road hopes to make the spaces more functional and brighten the work areas of employees. It also provides an opportunity to update finishes and mechanical/electrical systems to 2005 technologies and beyond.
6. The Toll Road is in the process of rehabilitating all radio relay buildings. We support the needed rehabilitation of these structures. Also, they have added some new radio relay buildings which were sorely needed.
7. The Toll Road is in the process of construction of three (3) new storage buildings. They include two for Elkhart Maintenance and one for the Sign Shop at MP 87.1; also included in this construction program is a new addition to Building Maintenance East Facility at MP 125.8. All of the aforementioned projects are under construction and nearing completion.

8. The existing Hydrotherm boilers that are in use at many toll plazas and travel plazas are at the end of their useful life. It is recommended that they be replaced with boilers that are supported with parts and service that are readily available in this area and would be more cost effective.

C. Future Needs

1. As outlined in the 2004 annual report, an addition is now complete at the utility building at MP 5 at the Calumet eastbound entry. This addition should help the ever growing Toll Road operation at this entry point.
2. The Toll Road has requested that RQAW assist them in programming the requirements for a new State Police Post at District 11. We have completed the process of interviewing state police personnel and officials and compiling a report and preliminary drawings to meet their requirements. This work should proceed as funds become available. When this effort is feasible, an architect will be commissioned to do the construction documents for the proposed State Police Post.
3. Since many of the toll booths on the Toll Road are of the 1950's vintage, they should be either replaced with new state-of-the-art toll booths with the latest toll collection equipment in mind and or completely rehabilitated with the existing toll booths incorporating the new technology in toll collection into the design.

D. Priority Comment

1. Needs immediate attention.
2. Initiate rehabilitation within three years.
3. Initiate rehabilitation within four to seven years.
4. Cosmetic repair not absolutely necessary.

The following listing of priority needs was developed as a result of the inspection or due to service life criteria. The cost estimates of these items are very rough and should be redefined as the District personnel complete the plans and specifications.

Priority No. 1 Needs:

1. Repair or replacement steel framing for windows in shelters at tunnel access stairways to toll plazas.
2. Most basements in travel plazas are in deplorable condition. The basements need to be cleaned and kept in this condition on a regular basis. Some basement areas are in worse condition than others, but it can safely be said that none are in good condition.
3. Exterior painting of Toll Plaza utility buildings exposed steel: This work should be either repainted and or extraneous metal items on the exterior removed.
4. Point cracks in chimney of older Toll Plaza utility buildings and/or demolish down to two feet above roof level and top with aluminum caps.

Priority No. 2 Needs:

The Toll Road engaged the services of a landscape consultant to prepare a landscape master plan which was completed in 2002. The master plan is to be utilized as a guide for replacement of existing landscaping and the installation of all new landscaping for various Toll Road facilities. RQAW is in complete agreement with this philosophy, and this program should continue as funds are available for upgrading existing landscaping throughout the corridor.

Priority No. 3 Needs:

Replace all aluminum cladding on exterior of 1980 Toll Plaza buildings with new limestone veneer.

Priority No. 4 Needs:

Re-point stone veneer on Well House Building at Travel Plaza 3S.

Prioritized items recommended for rehabilitation/construction during the next four years are listed in table in Section 4.4.

E. Building Accomplishments

1. A new maintenance building housing a complete maintenance facility has been constructed at Elkhart Maintenance M3. This facility was opened early in fiscal year 2004. The old M3 Maintenance Building was rehabilitated for the storage of contents of two buildings which were destroyed in a tornado at the Administration Building complex in 2001. Also, housed in this rehabilitated facility is the building maintenance that was originally located in the Administration Building.
2. An existing residence on the property at MP 37.5 is being demolished at this time. The accompanied pole building on this property is being used as a building maintenance for the west end of the Toll Road. Improvements to the maintenance building include new HVAC system and water heaters, as well as restrooms and break room for employees.
3. The work in Phase 1 of the Administration Building has been completed, thereby freeing up other areas in Phases 2, 3 and 4 so that work on these phases can continue when funding becomes available.

## **2.6 HAZARDOUS MATERIAL MANAGEMENT**

### **A. Toll Road Generated Hazardous Material Management**

The Toll Road has created a Hazardous Waste Management Plan to ensure proper disposal and storage of hazardous materials. The Hazardous Waste Management Plan includes the Hazardous Material Tracking/Disposal Plan, which contains the following elements:

1. All maintenance areas have a covered storage area with concrete base and containment curb for the temporary storage of hazardous materials.
2. All generated waste is stored in proper containers, and all containers are tagged and marked. Waterproof tags and markers are utilized during the labeling procedure.
3. An inventory is taken by each maintenance area supervisor on a monthly basis, noted on forms provided, and forwarded to the Administration Building.

4. The central collection point for hazardous material on the Toll Road is at Maintenance Area No. 3 behind the Sign Shop.
5. From the central collection point, a licensed disposal company is contracted to remove and dispose of the waste. All waste generated is disposed of on a monthly basis to ensure that waste is stored for less than ninety (90) days.
6. Records are kept by each maintenance area supervisor on all waste collected and disposed of.

B. Emergency Response

The Toll Road currently has verbal and/or contractual agreements with the City of Hammond, the City of Gary, Porter County, LaPorte County, the City of South Bend, the City of Elkhart, and the City of Angola to provide hazardous material response teams to assist in the isolation and containment of hazardous material spills, which may be caused by carriers utilizing the Toll Road. It is recommended that this practice be continued.

C. Personnel Training

The Toll Road has approximately two (2) employees that are certified at the forty (40) hour Hazardous Waste Site Worker Level for Haz-Mat response. All Roadway Maintenance personnel are trained at the twenty-four hour Hazwoper Operational Level, to be defensive in the stopping of diesel and other non-hazardous spills. All employees receive Awareness Level Haz-Mat training. Building Maintenance personnel receive eight (8) additional hours training on Confined Space Procedures. Dispatch personnel receive four (4) hours Dispatch Awareness Level Training.

The Environmental Staff Engineer for the Toll Road monitors and observes cleanup operations on the Toll Road to ensure that hazardous substances are properly and completely removed and to make sure that impacted locations are restored to their original conditions.

D. 2005 Haz-Mat Incidents



Excluding diesel fuel spills, there have been two (2) hazardous material spill responses during FY 2005. One spill was on August 11, 2004 and was a release of Sodium Hydroxide. The other spill was on October 15, 2004 and was a release of Latex Paint.

## **2.7 WASTEWATER TREATMENT FACILITIES**

### **A. General**

During the 2005 inspection, most of the major equipment items were reported to be in adequate condition by Toll Road personnel. Continued routine and preventative maintenance efforts at current levels should provide a long useful life for the major process equipment components. It is recommended that the existing program to replace worn out or obsolete equipment on an as-needed basis be continued.

### **B. Facility Upgrades and General Concerns**

The Toll Road has NPDES discharge permits at Travel Plazas No. 3 and 7. The table below shows the pertinent information about the permits. The renewal application for Travel Plaza No. 3 has been submitted with no response received at the time of this report.

<b>TRAVEL PLAZA</b>	<b>NPDES No.</b>	<b>EFFECTIVE DATE</b>	<b>EXPIRATION DATE</b>
3	IN 0020931	March 1, 2001	December 31, 2005
7	IN 0050300	September 1, 2002	June 30, 2007

Historically, both of the WWTF (Wastewater Treatment Facility) have met their discharge permit requirements. However, over the past several years the WWTF effluent at Travel Plaza No. 3 has exceeded the allowable ammonia limit, typically during the period between May and August. Ammonia levels may be increasing due to the removal of any gray water being sent to the plant from the food vendors, low flow toilets, the addition of an RV dump station, and high ammonia levels in supernatant from the plant's anaerobic digester. Toll Road personnel have been manually adding sodium bicarbonate to the waste stream to increase alkalinity, thereby increasing ammonia removal in the plant. While this operational change has significantly lowered the level of each

exceedence, it has not significantly lowered the number of exceedences on an annual basis. The majority of exceedences occur during the summer months after weekends or holidays. Overtime has been authorized to allow the operators to attend to the plant on weekends and holidays. The plant seems to be operating better during fiscal year 2005, although the plant is still in need of replacement.

RQAW and the Toll Road conducted an in-depth study of the treatment plant from May 2003 through July 2003 including the Memorial Day and Independence Day holidays. The final report on the study was issued in 2004 indicating that the most cost effective solution is a replacement of the current facility. The new wastewater treatment facility should go out for bid during the 2006 fiscal year. The collection system should be evaluated in tandem with the replacement of the wastewater treatment system.

The floating cover on the anaerobic digester at the Travel Plaza No. 3 WWTF is stuck in one position, as several of the support rails have rusted away. This unit will be replaced with the complete replacement of the treatment facility. Consideration should be given to adding a grinder pump at the RV dump station.

The existing natural gas furnaces used for building heat and heating the anaerobic sludge digester at Travel Plaza No. 7 is scheduled to be replaced in the near future, as the burners were updated and have been in service since 1985 and the boilers were put in service in 1972. The trickling filter distribution system is in need of repair or replacement. The concrete tanks are in need of repairs as well. Consideration should be given to adding a grinder pump at the RV dump station. The concrete tanks and structures at Travel Plaza No. 7 show signs of deterioration.

Sludge from the wastewater treatment plants is land applied under existing permits. Renewal applications for these permits were submitted in a timely fashion in March, 2004. New, ten-year permits were issued on February 7, 2005. As part of the regulations, Toll Road personnel have been incorporating the sludge into the soil when land applied. Sludge is land applied twice per year.

TRAVEL PLAZA	Biosolids Land Application Permit	EFFECTIVE DATE	EXPIRATION DATE
3	IN LA 000380	February 28, 2005	January 31, 2015
7	IN LA 000381	February 28, 2005	January 31, 2015

The Toll Road added vault toilets at four (4) truck parking sites during FY 2001. Toll Road personnel pump these vault toilets and transport the sewage to the Travel Plaza No. 7 WWTF periodically.

The flow meter for the lift station at Travel Plaza No. 8 needs to be repaired as it is not currently functioning.

#### C. Laboratory Needs

The Toll Road WWTF process laboratories are adequately equipped to perform analysis sufficient for routine operational and regulatory compliance reporting. The laboratory equipment has been replaced and upgraded in a timely manner, including the dissolved oxygen meters that were purchased in 2004. It is recommended that this practice be continued on its current schedule.

The Toll Road WWTF laboratories are not currently certified, and in some cases lack required equipment, to perform analytical testing for volatile organic compounds (VOCs), inorganic compounds, and microorganisms. The regulatory requirements and subsequent need for these analyses are infrequent; consequently, it is recommended that the current practice for contracting for these services be continued.

## 2.8 WATER TREATMENT FACILITIES

#### A. General

A new well was installed at Travel Plaza No. 3 in 2004, and the water treatment plant and new distribution system at Travel Plaza No. 3 is under construction and should be completed by the 2006 fiscal year. The location of the new well and the water treatment plant that is under construction is the eastbound Travel Plaza (south). A completely new distribution system and a second,

redundant hydropneumatic tank were installed at Travel Plaza No. 7 during 2005. The facility at Travel Plaza No. 8 was upgraded with new wells, a complete loop system, and an additional hydropneumatic tank installed in 2004.

The Toll Road samples the water supply systems serving Travel Plaza Nos. 3, 7, and 8 and is in compliance with the Safe Drinking Water Act. The Toll Road has applied for and received a reduction in monitoring requirements for Synthetic Organic Compounds (SOCs) and Volatile Organic Compounds (VOCs) from IDEM as allowed by the Chaffee-Lautenberg Amendment to the Safe Drinking Water Act. A similar waiver has been received for the water system serving the Administration Building. This reduction in required monitoring was based upon previous water quality analysis and reduced Toll Road operating expenses. In 2004, nine (9) new digital meters were purchased for drinking water analysis. The meters report iron, chlorine, and pH.

The Toll Road currently uses approximately 30 wells for drinking water supply. The Safe Drinking Water Act classifies wells that regularly service a non-resident population of the same 25 or more people over a period of 60 days per year as non-transient, non-community water systems. Federal regulations (40 CFR 141.80(a)(1)) require that all non-transient, non-community water systems be sampled for the presence of lead and copper in the product water. The Toll Road has complied with this requirement and the results indicate acceptable levels of these constituents.

The number of non-transient, non-community, potable water systems operated by the Toll Road has increased due to the consolidation of facilities and employees. Due to these additional systems, the overall amount of required testing, compliance paperwork, and inspections by regulatory agencies have increased. EPA recently required Vulnerability Assessments be conducted on water supplies with greater than 3300 non-transient residents. Although the Toll Road water supplies at the Travel Plazas do not serve greater than 3300 non-transient residents, they do serve many individuals. It is recommended that assessments meeting the general requirements of Vulnerability Assessments be conducted at the Travel Plaza's with water supply systems.

## B. Facility Upgrades and General Concerns

The control systems for the three water plants were upgraded as part of the WWTF facility improvement project, which included the installation of an emergency generator at Travel Plaza No. 8. The improvements were completed during FY 2002.

There are a number of potable water wells that the Toll Road may need to replace in the near future. An additional well was installed at Travel Plaza No. 3 during FY 2004 due to fuel contamination near one of the existing wells. The water supply well at LaPorte has been pumping sand for several years and is located below grade at the bottom of a hill and is in need of replacement. There is no fence around the water supply wells at Elkhart Maintenance. This issue could be reviewed during the Vulnerability Assessments proposed above. Well No. 7A at Travel Plaza No. 7 has almost broken suction several times in 2004. It is suspected that the local water table is being lowered due to the large amount of farm irrigation ongoing at this location along the Toll Road during FY 2003 and FY 2004. It was reported that the water levels have been better during FY 2005, presumably due to the wetter weather.

The Elkhart Toll Plaza at MP 92 has a well and a septic system. Development has increased in the area and an assessment as to the feasibility of connecting that Toll Plaza to city water and sewer should be made.

Toll Road personnel have also indicated that a landowner adjacent to Travel Plaza No. 8 has been storing junked automobiles for the past few years near the property line. The Toll Road has continued to monitor the local aquifer, and water tests have not indicated higher pollutant levels to date.

The backwash from the water treatment plant at Toll Plaza No. 3 is discharged directly to the drainage ditch. There is no current NPDES discharge permit for this activity. It is currently in the plans to move the water treatment plant to the south side of the Toll Road, thereby making it much closer to the WWTF. The backwash water should then be routed to the WWTF.

## 2.9 REGULATORY COMPLIANCE

Numerous State and Federal environmental regulations continue to be promulgated regarding such topics as underground fueling systems, wastewater effluent discharge limits, potable water quality, hazardous waste disposal, air quality, storm water quality, groundwater protection, industrial hygiene and other related topics. It is expected that the permit burden on the Toll Road will not decrease in the foreseeable future.

The Toll Road currently has air operating permits for two (2) maintenance facilities and the Administration Building. These permits cover printing and painting operations.

The Toll Road has a number of underground fuel storage tanks at various facilities, such as the Administration Building, Maintenance Areas, Toll Plazas, and Travel Plazas. These tanks are primarily used for the storage of gasoline and diesel fuel. While the majority of the tanks are used for serving emergency diesel generators and are exempt from certain regulations, the Toll Road chose to upgrade all of its tanks to meet US EPA requirements that went into effect December 22, 1998. The Toll Road conducted an audit of vendor tanks in 1998 in anticipation of these regulations. In order to closely monitor the various underground fuel storage tanks, the Toll Road has been contracting outside services to test for tank and piping system leakage and corrosion. These tests are conducted on an annual basis.

The Toll Road has instigated a program to color-code manhole covers associated with underground storage tanks. The color coding is as follows:

- A. Green- diesel
- B. White - no lead gasoline
- C. Orange - vapor recovery
- D. Black - pump turbine
- E. Gray - interstitial monitors

The Toll Road has instituted a best management practice of sealing the manholes associated with the underground storage tanks.

Several no longer needed USTs have been closed during 2005 including several diesel generator tanks.

Recently, the Toll Road has been working with the Indiana Department of Transportation Central Office in the development of a Storm Water Quality Management Plan. This is in response to Storm Water Phase II rules being developed by IDEM. The final rules became effective on August 6, 2003. Through negotiations with IDEM, the Toll Road, in conjunction with INDOT, is in the process of obtaining an individual storm water permit.

In FY 2004, the Toll Road installed a Vortech unit to treat storm water runoff from the Travel Plaza No. 8 parking areas prior to discharge off site. These units require periodic maintenance to remove floatables, solids, and oils and greases that may accumulate. On August 2, 2005, the units were inspected and appear to be functioning adequately.

The Toll Road and RQAW have developed a scope of work for an Environmental Master Plan. A draft table of contents has been developed and work is progressing by sections on the Master Plan.

## **2.10 TRAVEL PLAZA OPERATIONS**

Net sales at the ten Travel Plaza restaurants totaled \$27,176,498 in FY 2005. Rental returned to INDOT was \$3,558,155.

The current restaurant operators are as follows:

Travel Plaza 1 (MP 22)	Hardee's Food Systems BP
Travel Plaza 3 (MP 56)	McDonald's BP
Travel Plaza 5 (MP 90)	HMS Host BP
Travel Plaza 7 (MP 126)	Hardee's Food Systems Berryman & Assoc. Mobil
Travel Plaza 8 (MP 146)	McDonald's Berryman & Assoc. Mobil

Gasoline sales totaled 21,639,747 gallons, and diesel fuel sales reached 25,259,987 gallons, for a combined total of 46,899,734 gallons. Rental returned to INDOT totaled \$3,257,263. Both the fuel station operators and the restaurant operators are responsible for the maintenance of their respective Travel Plaza facilities.

## **2.11 COMMUNICATIONS**

In December of 2004, the digital microwave system was presented to the Toll Road for evaluation prior to final acceptance testing. A significant amount of technical issues were overcome in the project and has been accepted by the Toll Road in August of 2005. The Toll Road will start updating systems connected to the microwave network in an effort to better support the revenue collection and traffic management functions. The Toll Road has installed a broadband microwave connection at the Borman TMC and has used the system to share traffic data, video images and other resources to allow for better coordination between the two operations. The department has also been able to expand its staff to better accomplish its goals and reduce its reliance on contractors and their high cost. The Toll Road will continue its efforts to participate more fully with other GCM (Gary-Chicago-Milwaukee) corridor agencies focusing on better dissemination of information and better services for the users of the Toll Road in regard to route guidance, weather, road conditions, accidents and construction throughout the region.

## **2.12 TOLL COLLECTION TECHNOLOGIES**

The Toll Collection system continues to work well. The selected components of the system have proven to have long service life and minimal down time. Overtime for after-hours service has been reduced 75 percent with the implementation of the new system. The remote management functions designed into the system allows an analyst to remotely correct a system malfunction. This would normally have required a technician to be dispatched and drive to the location. This remote operation allows an analyst to correct a problem in a matter of minutes rather than hours. As with any system in continuous operation, some technologies are reaching the end of their service life and plans are being developed for their replacement.

The Barrier portion of the toll collection system has been in continuous operation since 1999. The Toll Road is facing the process of replacing the computers that serve as the interface for the toll collectors. Because of the system design, the other components; printers, vehicle detection equipment, and displays will remain in place. It will allow a seamless transition to new equipment without the need for retraining collectors.



The Toll Road has researched the inclusion of the Electronic Toll Collection (ETC) system and is prepared to incorporate that technology in the system at the appropriate time. Some work remains for the central systems along with interaction with supporting agencies that are required to successfully implement the ETC system.

## **2.13 OFFICE AUTOMATION TECHNOLOGY**

The Toll Road has undergone a major renovation to the Administration Building. The Toll Collection and Data Processing departments have moved into new the offices in FY 2005. A great deal of planning has gone into these new offices in regards to wireless access, video on demand, Voice over IP (VOIP) phone connectivity and high-speed networking.

Many of the operational servers are reaching the end of their service life or they lack the capacity to keep up with the online demands of the users. These system servers will be replaced over the coming months in coordination with the implementation of multiple high-speed networks with separate functional networks to increase capacity. The Toll Road has also seen a migration of online storage of reports and other documents and that trend is likely to continue as more systems are implemented.

## **2.14 SIGNING AND LIGHTING**

As part of the Additional Project 2000, a contract was let in July 2002 for Interchange Modifications at MP 17 which included the modernization of the signing and lighting at this location. It is intended to upgrade all signing and lighting throughout the Additional Project 2000 as it progresses.

The Toll Road continues to utilize many portable variable message signs, which are used to keep the patrons informed as to any variations or backups in the normal traffic flow. These signs have achieved a major improvement in the safety of work sites, as well as greatly increasing the information transmitted to the traveling public. Also, the Toll Road has installed permanent variable message signs at Westpoint Toll Plaza at MP 1, Cline Avenue at MP 10, Gary East at MP 17, Lake Station Toll Plaza at MP 21 and Portage Toll Plaza at MP 23. In the future as the Toll Road institutes the Intelligent Transportation System (ITS), Incident Management System (IMS) and computer networks are installed, these signs could be utilized to provide valuable information to the traveling public as part of these systems.

As an initial part of the ITS, in the past year the Toll Road has installed Dynamic Message Signs (DMS) at twenty-two (22) mainline locations along the corridor. These locations are divided equally between the eastbound and westbound directions. They will be utilized to make the motoring public aware of road conditions, changing traffic conditions, construction related delays, accident locations and any other conditions or incidents throughout the length of the Toll Road. A number of Toll Road Personnel from the Engineering and Roadway Maintenance Departments and Indiana State Police Personnel are assigned as Administrators and Operators of the system. In FY 2005, the Toll Road is let a DMS Maintenance Contract to provide ongoing maintenance for the system.

During the past year the Toll Road Sign Shop personnel have been refurbishing distance/destination signs throughout the corridor from MP 31 to MP 156. It was completed in FY 2005.

In FY 2004, 0.1 mile and 0.2 mile reference mile markers have been installed at MP 5 to 14 and MP 72 to 96 respectively. In FY 2005, the Sign Shop personnel had been working to replace all mile markers through the Toll Road. Currently, the Sign Shop has completed approximately 90% of the project and should finish in FY 2006.

As part of their ongoing efforts to improve safety and provide better service to the motoring public, the Toll Road has revised their signing at the toll plazas in conjunction with using new, bolder pavement markings. It is felt that these improvements will reduce the number of last minute lane weaving maneuvers.

The Toll Road is continuing to utilize the Federal Highway Administration's Sign Management System (SMS) as a method of improving their sign maintenance and replacement program. The Toll Road will continue to upgrade signing and lighting for better use of signs and locations to comply with current FHWA interstate standards and regulations.

## **2.15 HOOSIER HELPERS**

The Toll Road initiated the Indiana Toll Road Cares (ITRC) program in 1998 to help aid disabled vehicles and the patrons that use the facility. During the past year the program has become affiliated, primarily in name only, with Hoosier Helpers that has been operating in northern Indiana on the Borman Expressway and other parts of the Interstate system.

Hoosiers Helpers - like ITRC - was setup to give minimum assistance to stranded motorists on the interstate system, enabling them to get assistance and get them on their way. On the Toll Road this program has been integrated into the maintenance personnel's routine patrol procedures. Hoosier Helpers intent is to provide the motoring public on the Toll Road with friendly and helpful assistance from Toll Road personnel. Services provided range from simply giving information to a patron to assisting at an accident scene, providing fuel or tire repair, etc. Maintenance personnel have broken down these services into twelve (12) different categories and are compiling a record of services rendered. For the period from July 2004 through June 2005 (FY 2005), the following services were provided.

SERVICE	MAINTENANCE AREA				TOTAL
	M-1	M-2	M-3	M-4	
INFORMATION	291	361	273	426	1,351
GAS	127	78	71	66	342
TIRE	306	204	214	138	862
JUMP START	32	7	20	21	80
WRECKER	198	96	223	119	636
ACCIDENT	103	47	63	51	264
DIESEL FUEL	21	10	10	21	62
ABANDONED VEHICLE	189	90	118	62	459
FIRE	3	2	8	4	17
WATER	15	17	16	17	65
SLEEPING MOTORIST	2	8	45	19	74
ESCORT	11	13	7	7	38
<b>TOTALS</b>	<b>1,298</b>	<b>933</b>	<b>1,068</b>	<b>951</b>	<b>4,250</b>

Radio-Control will continue to monitor the program to assist the maintenance personnel in their efforts to aid patrons, and to record a history of information for future use.

## **2.16 ROLLING STOCK AND MAINTENANCE EQUIPMENT**

The Toll Road continuously replaces roadway maintenance and other equipment as necessary with new machinery so that inefficient and costly equipment can be retired. In FY 2005, the following equipment was purchased:

- A. Five (5) front-end loaders
- B. Fifteen (15) pickup trucks (8 with lift gates)
- C. One (1) CNG sweeper for Porter Maintenance.
- D. One (1) bucket truck for the Sign Shop
- E. Eight (8) truck mounted crash attenuators
- F. Two (2) 5000 lb fork lifts

For FY 2006, the Toll Road has budgeted for the purchase of the following equipment:

- |                                 |                                    |
|---------------------------------|------------------------------------|
| A. Ten (10) snow removal trucks | I. One (1) paint striper           |
| B. Four (4) bucket vans         | J. Two (2) sweeper trucks          |
| C. One (1) battery forklift     | K. Six (6) message sign trailer    |
| D. One (1) mower trailer        | L. One (1) truck mounted excavator |
| E. Four (4) tire changer        | M. Five (5) tractors               |
| F. Four (4) tire balancer       | N. Four (4) welders                |
| G. One (1) lather               | G. Five (5) mowers                 |
| H. One (1) band saw             |                                    |

Funds have been budgeted for purchase of additional rolling stock and maintenance equipment for future fiscal years. However, Toll Road personnel are continuing to prioritize needs. Additional equipment will be purchased as determined by these priority needs and as budgeted funding permits. All purchases will be in accordance with INDOT's standard practices and procedures. Funding for this equipment has been included in the Ten Year Needs Summary (Table 7).

## **2.17 LANDSCAPING**

The Toll Road continues to utilize the Landscape Master Plan that was developed for the entire Toll Road corridor and completed in January of 2002. The purpose of the Plan is to provide a guide to the future aesthetic appearance of the Toll Road Corridor. The Toll Road staff and consultants will use the Master Plan as a reference for landscape treatments when developing plans for new projects. The application of the recommendations of the Master Plan will enhance the natural features along the Toll Road and will lead to a long-term goal of acquiring a scenic highway designation.

## 2.18 FUTURE NEEDS

### A. Trucks Only Travel Plazas

The Long Range Needs Study prepared by Wilbur Smith and Associates (WSA), submitted to the Toll Road in April 1997, identifies the need for additional Travel Plazas for trucks only to be added along the corridor. For the long-range demands for additional truck facilities, the WSA report recommends that new Full Service Travel Plazas for Trucks Only be constructed. However, the Toll Road does not have any plans for the construction of Full Service Truck Plazas, other than the upgrades to existing Travel Plazas and additional truck parking already completed.

At Travel Plaza 3S where the volume of trucks continues to overflow existing parking facilities, additional land has been purchased adjacent to the Plaza for the construction of much needed additional truck parking.

### B. Third Lane (MP 72 to MP 96)

Traffic forecasts prepared by Wilbur Smith and Associates indicate the need to investigate the area from MP 72 to MP 96 for additional lane construction after the year 2010.

### C. Design Criteria

Acceleration and deceleration taper lanes for the various Interchanges and Travel Plaza ramps are in many cases too short in accordance with the current standards. RQAW Engineers have noted this condition in past years during our pavement inspections. In some cases some of these taper lengths are restricted by mainline bridges that do not have full shoulder widths and also, bridges going over the Toll Road that do not have sufficient horizontal clearance. It should be noted that in the future when these bridges are being rehabbed, that proper shoulder widths and horizontal clearances should be provided wherever possible to allow for the lengthening of these taper lanes.

RQAW Engineers met with Toll Road Engineers to discuss the future bridge rehabilitation policy and to review RQAW oversight for the Toll Road bridges. Based on the present and traffic forecasts prepared by Wilbur A. Smith and Associates, RQAW has divided the Toll Road mainline into the following four (4) sections:

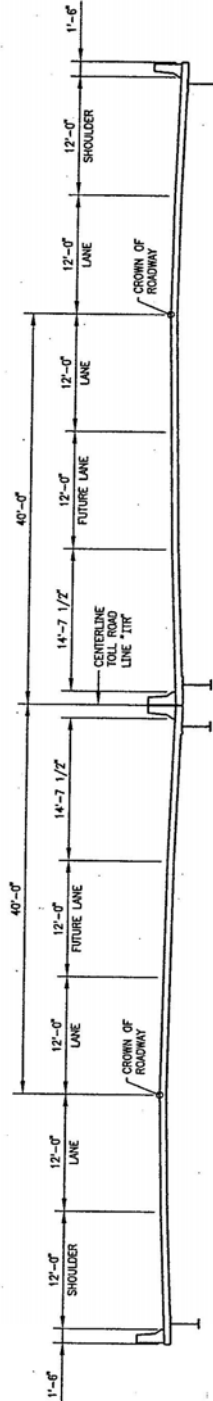
1. MP 0 to MP 37.5
2. MP 37.5 to MP 72
3. MP 72 to MP 96
4. MP 96 to MP 156.7

A discussion was held concerning the proposed typical section for bridges and different widths for outside and median shoulders to be used on future rehabilitation projects. Based on proposed Project 2000 development, commuter traffic forecasts for peak hours and surrounding area classifications, the following bridge typical sections were identified for the different sections of the Toll Road.

- |    |                   |   |
|----|-------------------|---|
| 1. | MP 0 to MP 37.5   | Closed median, 14ft. outside shoulder           |
| 2. | MP 37.5 to MP 72  | 10 ft. inside shoulder, 12 ft. outside shoulder |
| 3. | MP 72 to MP 96    | Closed median, 12ft. outside shoulder           |
| 4. | MP 96 to MP 156.7 | 10 ft. inside shoulder, 12 ft. outside shoulder |

Detailed typical sections are as follows:

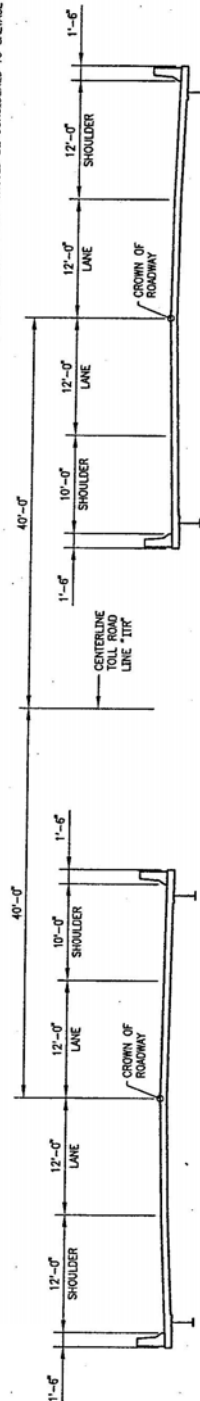




**PROPOSED BRIDGE - URBAN (COMMUTER) TYPICAL SECTION**  
**MILEPOST 72 TO MILEPOST 96**

SCALE: 1" = 10'

- MEDIAN CLOSURE OF ALL STRUCTURES (FUTURE PROJECTED COMMUTER TRAFFIC)
- ECONOMICAL ANALYSIS FOR SUPERSTRUCTURE TYPE
- DESIGN FOR HS20 LOADING CHECKED FOR MILITARY LOADING
- ALSO DESIGN FOR TOLL ROAD LOADINGS (TURNPIKE)
- SEMI-INTEGRAL BENTS SHOULD BE CONSIDERED TO SALVAGE EXISTING PILING



**PROPOSED BRIDGE - RURAL TYPICAL SECTION**  
**MILEPOST 96 TO MILEPOST 156.9**

SCALE: 1" = 10'

- ECONOMICAL ANALYSIS FOR SUPERSTRUCTURE TYPE
- DESIGN FOR HS20 LOADING CHECKED FOR MILITARY LOADING
- ALSO DESIGN FOR TOLL ROAD LOADINGS (TURNPIKE)
- SEMI-INTEGRAL BENTS SHOULD BE CONSIDERED TO SALVAGE EXISTING PILING



## 2.19 ADDITIONAL PROJECTS

### A. General

During the June 1999 meeting of the Indiana Transportation Finance Authority (ITFA), the ITFA Officials chose to identify Future Needs of the Toll Road to be funded from excess General Reserve Funds as Proposed Additional Projects.

### B. Proposed Additional Projects

#### 1. Lake Station/I-94 Toll Plaza (MP 21)

At this interchange, Toll Road Personnel, for the past 5 or 6 years, have been monitoring considerable increases in traffic from both the Toll Road and I-94. A lot of weave motions causing some congestion were noted at various locations at this interchange. The Toll Road is continuing to monitor this situation to determine what modifications are needed at this location to alleviate this hazardous condition.

As part of RQAW's Routine Services Contract, a Special Services Task Order was included for the preparation of preliminary schematic drawings and preparing preliminary engineering design for interchange modifications at this location. RQAW worked with Toll Road and INDOT personnel on this project.

#### 2. Third Lane (MP 10-31)

The April 1997 WSA report indicates the need for additional travel lanes to accommodate the future traffic projections for a large portion of the western 24 miles of the Toll Road. The study recommends that a third lane be added, both eastbound and westbound, from MP 3 to MP 21 by the year 2010. Due to many concerns expressed by the residents of the City of Portage around the Toll Plaza at MP 24, the Toll Road Officials decided to extend the eastern limits of the third lane study to approximately MP 31. This will allow for an investigation into the relocation of the Toll Plaza at MP 24 to alleviate the existing problems of noise and air quality in this area. The Toll Road amended RQAW's contract to provide a preliminary engineering report for the third lane improvements from MP 10 to MP 24, and also, to study the feasibility of relocating the Toll Plaza. The preliminary engineering report for additional lanes for the initial portion of this project from MP 10 to MP 17 was completed June 30, 2000. During the completion of the

preliminary design of this section, it became apparent that the eastern termini of this project should be moved to MP 18.7. The remaining portion of the Added Travel Lanes Preliminary Engineering Report from MP 18.7 to MP 24 was completed by RQAW in June 2002.

3. Barrier Toll Plaza Relocation (MP 24)

As noted in Section 2.19.B.2 above it is desirable to relocate the existing Barrier Toll Plaza at MP 24. In order to provide express lanes in the future for the deployment of Electronic Toll Collection (ETC) the existing plaza would have to be widened. This would require the purchase of residential property for the required additional right-of-way needed for this expansion. RQAW Engineers have prepared schematic drawings and cost estimates for relocating this facility to approximate MP 37.5. At this location, the Toll Road owns considerable right-of-way where the Service Areas 2N and 2S were originally located. In 2000 these areas were reopened for Trucks Only Travel Plazas, however, plans developed by RQAW for the barrier relocation would maintain a considerable amount of the truck parking at this location. It would appear that this is the best site for the relocation of the Barrier Toll Plaza now located at MP24. Due to delays in funding for ETC, this project is on hold.

4. Western Extension

A second scenario proposed by the WSA Long Range Needs Study for this area is to construct a Western Extension of the Toll Road from a new interchange at MP 7, westerly approximately five (5) miles to connect with I-94 (Calumet Expressway) in Illinois. As part of this western extension, the third lane study should be extended from MP 7 to MP 10. However, the planned expansion of the Borman Expressway with added travel lanes, make the Western Extension less feasible at this time.

5. Level of Service

The Long Range Needs Study submitted to the Toll Road by Wilbur Smith and Associates (WSA) in April 1997, addresses the issue of the level of service based on projected traffic for the years 2010 and 2020. For the western 24 miles of the corridor where added lanes and/or western extension are being proposed, the level of service was based on traffic projections for the years 2005, 2010 and 2020. Toll Road personnel and RQAW will use data from this report in preparing the various studies that are in progress as outlined above in Items 1, 2, and 3.

## C. Approved Additional Projects

### 1. Lake Station/I-94 Interchange Modifications (MP 21)

A Consultant was selected in March of 2001 to complete a survey of the area for the proposed interchange reconstruction and improvements at this location. Environmental studies are also being prepared by still another Consultant and RQAW will assist with investigation and analysis of wetlands in the project area if required. As part of RQAW's Routine Services Contract dated June 7, 2002, a Special Services Task Order was included for the preliminary engineering design for the modifications to this interchange. Due to non-compliance with the Air Quality Model prepared by Northwestern Indiana Regional Planning Commission (NIRPC) this project was delayed. No construction funding has been approved for this project.

### 2. Added Travel Lanes (MP 10.6 - 14.5)

Although no construction funding has been approved for this section, two (2) Design Consultants were selected in March 2001 to design and prepare final construction plans for this segment of Project 2000. The preliminary engineering for this section was completed by RQAW as part of their amended contract. RQAW will also perform the duties and obligations required of the Project Engineer for Project 2000 by the terms of the 1985 Trust Indenture as supplemented.

### 3. Added Travel Lanes (MP 14.5 - 18.7)

The ITFA has approved funding of \$ 44,000,000.00 from General Reserve Funds for the initial portion of Project 2000 from MP 14.5 to MP 17.7. The preliminary engineering for this section was completed by RQAW as part of their amended contract. During the preparation of preliminary plans, for various design and construction reasons, it became apparent that the eastern termini of this section should be extended to approximately MP 18.7. Three (3) Design Consultants were selected in March 2001 to design and prepare final construction plans for this segment of Project 2000. RQAW will perform the duties and obligations required of the Project Engineer for Project 2000 by the terms of the 1985 Trust Indenture as supplemented. The Construction Contract for the section from MP 15.5 to MP 18.7 was let on July 15, 2003 and the Notice To Proceed was issued on August 4, 2003. The completion of this project is scheduled for September 30, 2005. One additional Engineering

Consultant was selected in April 2002 to provide Contract Construction Administration Engineering for this project.

Structure 10-5 at MP 16.55 was included in the original Engineering Study and the approved ITFA funding for this section of the project. It was designed as part of the Gary East/I-65 Interchange Modifications Project because it was necessary to construct this structure prior to the interchange project for the maintenance of traffic and other considerations. The Construction Contract for Structure 10-5 was let on April 23, 2002 and was substantially completed in November 2002. The western most part of this section from MP 14.0 to MP15.5 has been delayed by problems related to an existing 72 inch sewer located within the project limits. There have been ongoing discussions between Toll Road Officials, the City of Gary, RQAW Engineers and the Design Consultant to reach a solution for this problem.

#### 4. Gary East/I-65 Interchange Modifications (MP 17)

Preliminary Engineering Reports were completed in July 2000, by RQAW and approved by INDOT for interchange modifications at this location. Careful consideration was given to a solution that would provide for minimal disruption of traffic during the construction period.

The ITFA approved funding of \$ 13,800,000.00 from General Reserve Funds for interchange modifications as part of Project 2000. RQAW also prepared preliminary plans for the interchange modifications at this location. One (1) Design Consultant was selected in March 2001 to design and prepare final construction plans. RQAW will perform the duties and obligations required of the Project Engineer for Project 2000 by the terms of the 1985 Trust Indenture as supplemented. The construction contract for this project was let on July 16, 2002. One additional Engineering Consultant was selected in April 2002 to provide Contract Construction Administration Engineering for this project.

The estimated cost of \$13,800,000.00 from RQAW's Preliminary Engineering Report for the MP 17 Interchange Modification Project was the basis for the ITFA's funding approval. After the completion of the preliminary report, two (2) bridges and some additional ramp work was added to the project. Therefore, an over-run of the approved funding occurred. The approved General Reserve Funds were supplemented with Toll Road Major Expense Funds to complete the project. The project was substantially complete in November 2003.

## 2.20 RE-INSPECTION SCHEDULE

In order for future inspections to be as meaningful as possible, it has been decided to re-inspect elements in more detail at specified intervals. The remaining elements of the Toll Road's operation will be subject to spot inspections during the year by RQAW personnel. If unusual circumstances occur, the schedule will be modified accordingly.

### INSPECTION SCHEDULE 2006 - 2010

Element	Inspection Rate	2006	2007	2008	2009	2010
Pavement (1)	Annual	X	X	X	X	X
Bridges - Spot (2)	Annual	X	X	X	X	X
Bridges - In Depth	2 years		X		X	
Buildings - Group A (3)	4 years	X				X
Buildings - Group B (4)	4 years		X			
Buildings - Group C (5)	4 years			X		
Buildings - Group D (6)	4 years				X	
Waste Treatment	2 years	X		X		X
Water Supply	2 years	X		X		X

#### Notes

- (1) Includes all related sub-elements, e.g. Guardrail, Fence
- (2) See Table A page 44
- (3) Group A - All Buildings - MP 0.0 - 24.0
- (4) Group B - All Buildings - MP 24.0 - 62.0
- (5) Group C - All Buildings - MP 62.0 - 115.0
- (6) Group D - All Buildings - MP 115.0 - 156.7

## SECTION 3

### TRUST INDENTURE REQUIREMENTS

#### 3.1 ESTIMATE OF OPERATING EXPENSES - FISCAL YEAR 2007

In accordance with Section 7.10 of the 1985 Trust Indenture and Section 402 of the Lease, it is estimated that the sum of \$39,128,857 will be required to meet the operating expenses of the Indiana Department of Transportation, Toll Road District, during the FY 2007. The details of the proposed budget for the forthcoming year are contained in the following pages.

The various department heads of the Toll Road District have developed the requested budget for the Toll Road District, FY 2007. The estimate reflects a realistic appraisal of the anticipated expenses of the Toll Road facility. The requested budget includes cost for recurring annual maintenance, toll collections, road patrol, administration and other services essential to the safety, convenience, and comfort of the patrons using the Toll Road.

It should be noted that the Toll Road District has traditionally run under its operating budget for the past several years. Due to some continuing stringent expense controls and innovative programs, FY 2007 expenditures are budgeted to be only 2.2% above FY 2006 levels. The District personnel in FY 2005 continued to operate under budget and should be commended for their efforts to control expenses in this manner and still maintain the excellent level of upgrading and maintaining the facilities of the Toll Road.

**ESTIMATE OF OPERATING EXPENSES  
INDIANA DEPARTMENT OF TRANSPORTATION  
TOLL ROAD DISTRICT  
ACCOUNTING SYSTEM  
FISCAL YEAR 2007**

**GENERAL ADMINISTRATION**

Personal Services	\$	99,196.00	
Services Other Than Personal	\$	82,700.00	
Services By Contract	\$	2,229,100.00	
Materials - Parts - Supplies	\$	6,200.00	
In-State Travel	\$	2,000.00	
Out-of-State Travel	\$	3,500.00	
			\$ 2,422,696.00

**TOLL COLLECTION**

Personal Services	\$	9,932,823.00	
Services Other Than Personal	\$	27,583.00	
Services By Contract	\$	340,657.00	
Materials - Parts - Supplies	\$	770,282.00	
In-State Travel	\$	69,566.00	
Out-of-State Travel	\$	-	
			\$ 11,140,911.00

**ROAD OPERATIONS**

Personal Services	\$	5,368,018.00	
Services Other Than Personal	\$	1,139,454.00	
Services By Contract	\$	350,698.00	
Materials - Parts - Supplies	\$	2,532,950.00	
In-State Travel	\$	10,024.00	
Out-of-State Travel	\$	-	
			\$ 9,401,144.00

**ADMINISTRATIVE SERVICES**

Personal Services	\$	202,384.00	
Services Other Than Personal	\$	27,500.00	
Services By Contract	\$	30,044.00	
Materials - Parts - Supplies	\$	13,290.00	
In-State Travel	\$	3,983.00	
Out-of-state Travel	\$	-	
Grants and Awards	\$	6,000.00	
			\$ 283,201.00

**PATRON SERVICES**

Personal Services	\$	60,620.00	
Services Other Than Personal	\$	600.00	
Services By Contract	\$	26,842.00	
Materials - Parts - Supplies	\$	11,820.00	
In-State Travel	\$	420.00	
Out-of-State Travel	\$	-	
			\$ 100,302.00

**INFORMATION SERVICES**

Personal Services	\$	1,372,690.00	
Services Other Than Personal	\$	20,061.00	
Services By Contract	\$	813,799.00	
Materials - Parts - Supplies	\$	644,464.00	
In-State Travel	\$	8,808.00	
Out-of-State Travel	\$	-	
			\$ 2,859,822.00

**ACCOUNTING/AUDIT**

Personal Services	\$	492,162.00	
Services Other Than Personal	\$	100.00	
Services By Contract	\$	26,270.00	
Materials - Parts - Supplies	\$	13,185.00	
In-State Travel	\$	1,530.00	
Out-of-State Travel	\$	-	
			\$ 533,247.00

**TOLL ROAD PATROL**

Services By Contract	\$	4,010,760.00	
			\$ 4,010,760.00

**INSURANCE AND TAXES**

Personal Services	\$	8,376,774.00	
			\$ 8,376,774.00

<b><u>GRAND TOTAL</u></b>			<b>\$ 39,128,857.00</b>
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**EXPENSE BY CATEGORY**

Personal Services	\$ 25,904,667.00
Services Other Than Personal	\$ 1,297,998.00
Services by Contract	\$ 7,828,170.00
Materials-Parts-Supplies	\$ 3,992,191.00
In-State Travel	\$ 96,331.00
Out-of-State Travel	\$ 3,500.00
Grants and Awards	\$ 6,000.00

<b>GRAND TOTAL</b>	<b>\$ 39,128,857.00</b>
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### 3.2 MAJOR EXPENSE FUND

In accordance with Section 7.03 of the 1985 Trust Indenture and Section 403 of the Lease, it is recommended that the following be deposited to the Major Expense Fund.

Deposit 2006 for FY 2007.....	\$ 35,000,000
Deposit 2007 for FY 2008.....	\$ 36,000,000
Deposit 2008 for FY 2009.....	\$ 35,500,000
Deposit 2009 for FY 2010.....	\$ 37,000,000
Deposit 2010 for FY 2011.....	\$ 35,000,000

This recommendation is based on the review of programs and needs with Toll Road staff and preparation of the Ten Year Needs Study pertaining to the year 2007 - 2016.

#### Minimum Deposits

In accordance with Section 7.03 of the Trust Indenture and Section 403 of the Lease, the Consulting Engineer is to include a minimum deposit to the Major Expense Fund. As noted above, the Ten Year Needs Study included in this report was prepared based on the recommended deposits. These amounts of deposit are required in order to sustain ongoing programs of construction and reconstruction required to maintain the Indiana Toll Road in good repair. It is acceptable if a lesser level of deposit is used for a short term only. This lesser level would only be for a one-year period in a situation where toll revenues were at a reduced level for an anticipated short term, according to the Traffic Engineer's projections. It is recommended the minimum deposit for any single year be the above recommended deposits less \$4,000,000. Subsequently, the road and bridge programs could be reduced \$2,000,000 each. In the event this action becomes necessary, RQAW will assist the District in developing reduced programs. Furthermore, the effect of this reduction would be thoroughly evaluated in the following year's Annual Report.

### 3.3 INSURANCE

In accordance with Section 7.12 of the 1985 Trust Indenture, the Consulting Engineer is to advise the Toll Finance Authority on reasonable insurance coverage. In an effort to save money on insurance costs, the Toll Road District has begun self-insuring staff cars and pick-up trucks. This will reduce the Automobile insurance cost by approximately 30%. Following is the latest schedule of insurance in effect for the Toll Road. The amounts of coverage are considered by RQAW to be proper and reasonable.

## SCHEDULE OF INSURANCE

May 31, 2005

<b>NAMED INSURED:</b>	Indiana Department of Transportation Toll Road District
<b>POLICY TERM:</b>	May 31, 2005 to May 31, 2006
<b>INSURING COMPANY:</b>	Indiana Insurance Company

### PROPERTY

Blanket Buildings/Personal Property/Towers	\$ 72,732,765
Deductible	50,000
Boiler and Machinery	Included
Business Income with Extra Expense	1,425,713

### GENERAL LIABILITY

General Aggregate	\$ 2,000,000
Products and Completed Operations	2,000,000
Personal Injury	1,000,000
Each Occurrence	1,000,000
Fire Damage	100,000

#### Premium Basis:

Code 48727 - Streets, Roads, Highways or Bridges	157 Miles
Code 91558 - Contractors-Subcontracted Work	29,250,000 Cost

### INLAND MARINE

Bridges	\$ 246,960,000
Deductible	2.5% of Each Structure
Business Income/Bridge Use	82,412,158
Mobile/ Contractors/Safety/Toll Collection/Misc. Equipment	17,269,827
Electronic Data Processing Equipment	2,980,000
Telecommunications Equipment	2,694,968
Leased or Rented Equipment	200,000
Deductible	500

## CRIME -ARMORED CAR DIVISION

Employee Dishonesty	\$ 500,000
Robbery Inside Premises – Money and Securities	500,000
Robbery Outside Premises – Money and Securities	500,000
Depositors Forgery	100,000
Deductible	10,000

## AUTOMOBILE

Limit of Liability	\$ 1,000,000
Uninsured Motorist	60,000
Underinsured Motorist	50,000
Comprehensive Deductible	1000
Collision Deductible	1000
Hired and Non Owned Liability	1,000,000
Hired Car Physical Damage	100,000

### Premium Basis:

	<u>Light/Private Passenger</u>	<u>All Other</u>
Liability	688.12	\$ 445.70
Uninsured Motorist	41.08	23.18
Underinsured Motorist	1.00	1.00
Comprehensive	0.00	63.27
Collision	<u>0.00</u>	244.31
Total Per Vehicle	\$ 730.20	\$ 777.46
 Total Number of Vehicles	 115	 78
Rate Per Vehicle	<u>X 730.20</u>	<u>X 777.46</u>
Total Premium for Owned Vehicles	\$ 83,973	\$ 60,641.88

Plus:

### **Armored Trucks:**

Liability	1,362.00
Auto Medical Payments	88.00
Uninsured Motorist	24.00

Underinsured Motorists	1.00
Comprehensive	135.00
Collision	<u>725.00</u>

Total Per Vehicle                      \$2,335 x 2 = \$4,670

**Total Automobile Premium                      \$ 149,245**

### **ARMORED CAR DIVISION**

Limit of Liability	\$ 1,000,000
Medical Payments	5,000
Uninsured Motorist	1,000,000
Underinsured Motorist	1,000,000
Comprehensive Deductible	1,000
Collision Deductible	1,000

### **UMBRELLA**

Limit of Liability – Aggregate	\$ 5,000,000
Limit of Liability – Occurrence	5,000,000
Self Insured Retention	10,000

### **WORKMEN'S COMPENSATION**

Bodily Injury By Accident (Each Accident)	\$ 500,000
Bodily Injury By Disease (Policy Limit)	500,000
Bodily Injury By Disease (Each Employee)	500,000

**Premium:                      \$ 115,467**

### **PREMIUM SUMMARY**

Package	\$ 699,807
• Property/Boiler	
• General Liability	
• Inland Marine	
• Crime	
Automobile	149,245

•National Indemnity Company (Armored Cars)	4,670
Umbrella	115,467
Workman's Compensation	<u>580,341</u>
<b>TOTAL ANNUAL PREMIUM</b>	<b>\$ 1,549,530</b>

## SECTION 4 TEN YEAR NEEDS STUDY

### 4.1 NEEDS SUMMARY

After inspection and evaluation of all elements of the Indiana Toll Road, and in accordance with the terms of its Agreement, RQAW has prepared the following Ten Years Needs Summary. The basis of recommendation for the various elements of the program accounts is summarized below and in Table 7 and the Major Expense Fund Deposits shown in Figure 8.

<u>Account No.</u>	<u>Description</u>	<u>Basis of Recommendation</u>
4100 - 4800	Equipment	For FY 2007, see Ten Year Needs Summary. Starting in FY 2008, Undistributed Misc. Amount.
4220	Bridge Rehabilitation & Painting	See Bridge Program (Section 4.2).
4330	Roadway - Major Repairs, Resurfacing	See Pavement Resurfacing Program (Section 4.3).
4440	Major Building Repairs	See Building Program (Section 4.4).
4410	Gasoline - Fuel Storage	See Building Program (Section 4.4). Undistributed amount for future EPA requirements or leakage problems.
4420	Water Treatment Plants	See Building Program (Section 4.4).
4423	Sewage Disposal Plants	See Building Program (Section 4.4).
4430	Travel Plaza Buildings	See Building Program (Section 4.4).
4436	Travel Plaza Grounds	For FY 2007, see Ten Year Needs Summary. Starting in FY 2008, Undistributed Misc. Amount.
4550	Consulting Fees	For FY 2007, see Ten Year Needs Summary. Starting in FY 2008, Undistributed Misc. Amount.
4560	Chemical Storage Areas	Undistributed amount for future EPA requirements.
4370	Guard Rail - Major Repair Or Replacement	Starting in FY 2007, Undistributed Misc. Amount.
4620	Roadway Drainage	Undistributed amount to implement shoulder drain installation and complete culvert installation in median.
4630	R.O.W. Fencing	Cost of materials only.
4640	Weather Warning System	Cost of materials only.

**Table 7**  
**TEN YEAR NEEDS SUMMARY BY FISCAL YEAR - MAJOR EXPENSE FUND**

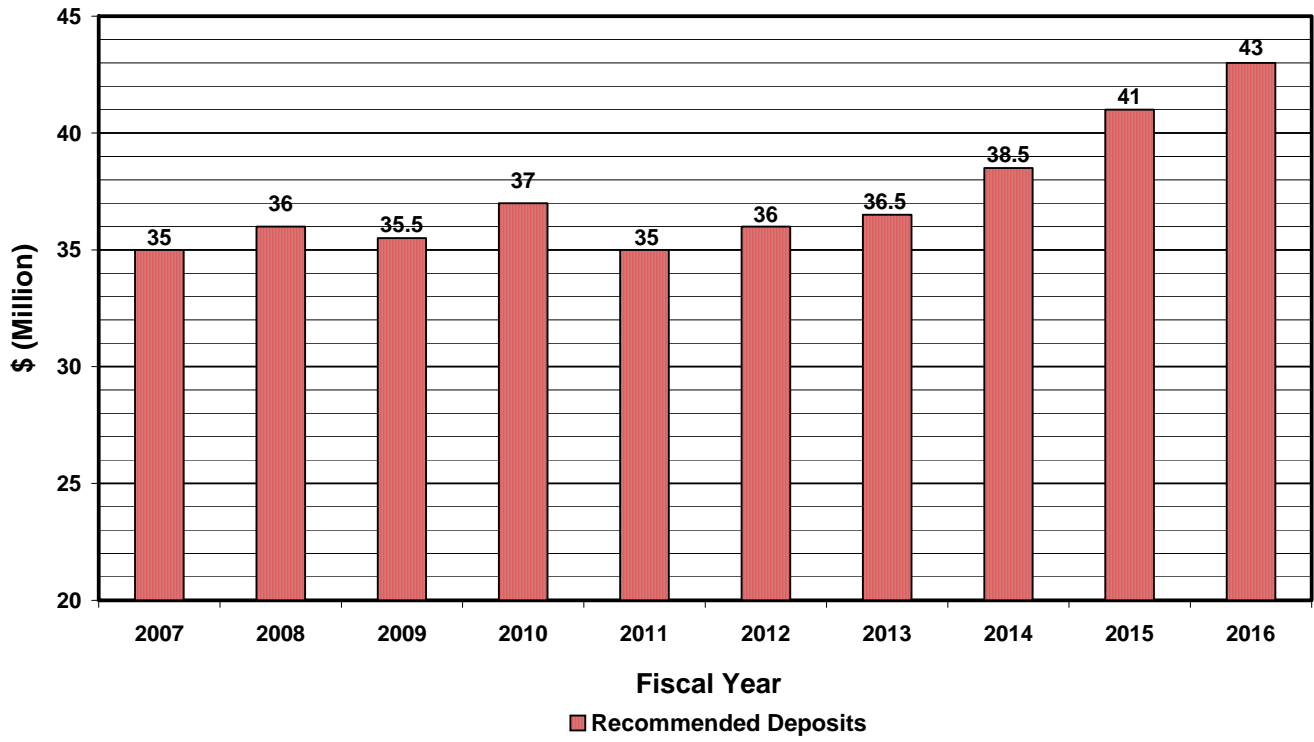
(Dollars shown in thousands, 5 percent annual inflation assumed)

ACCOUNT NUMBER	ITEMS										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
4100-4800	Equipment	7,786	2,872	3,125	3,385	3,702	3,926	4,152	4,360	4,578	4,807
4220-4225	Bridge Rehabilitation & Painting	9,545	17,075	15,078	15,348	13,732	13,260	11,448	13,772	14,027	14,728
4330	Roadway-Major Repairs, Resurf.	9,600	8,700	9,600	10,100	9,500	10,100	11,800	10,700	12,500	13,125
4440	Major Building Repairs	3,850	2,990	3,140	3,297	3,462	3,635	3,817	4,008	4,208	4,418
4410	Gasoline-Fuel Storage	74	78	82	86	90	95	100	105	110	116
4420	Water Treatment Plants	575	600	630	662	695	730	767	805	845	887
4423	Sewage Disposal Plants	700	720	760	798	838	880	924	970	1,019	1,070
4430	Travel Plaza Bldgs. (Incl Equip)	198	208	218	229	240	252	265	278	292	307
4436	Travel Plaza Grounds	890	935	980	1,029	1,080	1,134	1,191	1,251	1,314	1,380
4550	Consulting Fees	1,033	975	1,000	1,100	1,000	900	1,000	1,050	1,103	1,158
4560	Chemical Storage Areas	210	220	230	242	254	267	280	294	309	324
4370	Guardrail-Major Repair/Repl.	53	56	59	62	65	68	71	75	79	83
4620	Roadway Drainage	135	142	149	156	164	172	181	190	200	210
4630	R.O.W. Fencing	169	177	186	195	205	215	226	237	249	261
4640	Weather Warning System	18	19	20	21	22	23	24	25	26	27
<b>GRAND TOTALS</b>		\$34,836	\$35,767	\$35,257	\$36,710	\$35,049	\$35,657	\$36,246	\$38,120	\$40,859	\$42,901
<b>MAJOR EXPENSE FUND DEPOSITS</b>											
<b>(Recommended)</b>		<b>\$34,500</b>	<b>\$36,000</b>	<b>\$35,500</b>	<b>\$37,000</b>	<b>\$35,000</b>	<b>\$36,000</b>	<b>\$36,500</b>	<b>\$38,500</b>	<b>\$41,000</b>	<b>\$43,000</b>



## MAJOR EXPENSE FUND DEPOSITS

Fiscal Years 2007 - 2016



## 4.2 BRIDGE PROGRAM

### TOLL ROAD BRIDGE NEEDS FISCAL YEAR 2007

#### TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC OVER STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.

Structure Number	Milepost Marker	Length of Structure	County Code	Year Rehabbed	Estimated Cost Painting	(2007 Dollars) Rehabilitation
@35-4	98.50	116.0	20	1979	\$ 20,000	\$ 1,450,000
@47-1	131.41	181.0	44	1988	----	<u>\$ 2,250,000</u>
Subtotal					\$ 20,000	\$ 3,700,000
@1A3-2	0.34	127.0	45	1985	\$ 14,000	\$ 780,000
@1-4	2.14	108.0	45	1980	15,000	860,000
@2-3	3.52	304.0	45	1985	76,000	2,000,000
@2-4	4.18	317.0	45	1985	<u>68,000</u>	<u>1,770,000</u>
Subtotal					\$ 173,000	\$ 5,410,000
TOTAL					\$ 193,000	\$ 9,110,000
(Account No. 4220) 2007 GRAND TOTAL						\$ 9,283,000

\* Record Unavailable.

# Total Bridge Replacement

@ Includes structure widening and deck replacement.

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures

‡ Project 2000 – Demolition, Rehabilitation and Replacement  
(Toll Road (EB & WB) over Broadway, Virginia Ave. and E.J.&E.R.R.)  
County Code:

Lake Co.	45
Porter Co.	64
LaPorte Co.	46
St. Joseph Co.	71
Elkhart Co.	20
LaGrange Co.	44
Steuben Co.	76

**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2008**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC  
OVER STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

<b>Structure Number</b>	<b>Milepost Marker</b>	<b>Length of Structure</b>	<b>County Code</b>	<b>Year Rehabbed</b>	<b>Estimated Cost Painting</b>	<b>(2008 Dollars) Rehabilitation</b>
‡9-1 EBL	14.54	3958	45	1997	----	\$ 12,500,000
@10-7 EBL	15.34	147.0	45	1993	----	<u>\$ 550,000</u>
<b>Subtotal</b>					----	<b>\$ 13,050,000</b>
@36-1	100.14	430.0	20	1984	----	<u>\$ 5,100,000</u>
<b>Subtotal</b>					----	<b>\$ 18,150,000</b>
<b>TOTAL</b>					----	<b>\$ 18,150,000</b>
<b>(Account No. 4220) 2008 GRAND TOTAL</b>						<b>\$ 18,150,000</b>

- \* Record Unavailable
  - # Total Bridge Replacement
  - @ Includes structure widening and deck replacement
  - ‡ Project 2000 – Demolition, Rehabilitation and Replacement
- County Code: See Page 118.

**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2009**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC  
OVER STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

<b>Structure Number</b>	<b>Milepost Marker</b>	<b>Length of Structure</b>	<b>County Code</b>	<b>Year Rehabbed</b>	<b>Estimated Cost Painting</b>	<b>(2008 Dollars) Rehabilitation</b>
‡9-1 WBL	14.54	3958	45	1997	----	\$ 12,500,000
@10-7 WBL	15.34	147.0	45	1993	----	<u>\$ 550,000</u>
<b>Subtotal</b>					----	<b>\$ 13,050,000</b>
I69-156-4820A	155.47	235.0	76	----	----	\$ 740,000
53-7	156.06	26	76	----	N/A	<u>\$ 60,000</u>
<b>Subtotal</b>					----	<b>\$ 800,000</b>
<b>TOTAL</b>					----	<b>\$ 13,850,000</b>
<b>(Account No. 4220) 2009 GRAND TOTAL</b>						<b>\$ 13,850,000</b>

@ Includes structure widening and deck replacement

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures  
County Code: See Page 118.

**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2010**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC  
OVER STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

<b>Structure Number</b>	<b>Milepost Marker</b>	<b>Length of Structure</b>	<b>County Code</b>	<b>Year Rehabbed</b>	<b>Estimated Cost Painting</b>	<b>(2014 Dollars) Rehabilitation</b>
@ 8-5	12.27	247.0	45	1988	----	\$ 3,500,000
@ 8-6	12.46	117.0	45	1988	----	\$ 1,300,000
@ 8-7	12.70	127.0	45	1988	----	\$ <u>5,300,000</u>
				<b>Subtotal</b>	----	<b>\$ <u>10,100,000</u></b>
				<b>TOTAL</b>	----	<b>\$ 10,100,000</b>
				<b>(Account No. 4220) 2010 GRAND TOTAL</b>		<b>\$ 10,100,000</b>

@ Includes structure widening and deck replacement

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures  
County Code: See Page 118.

**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2011**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC OVER  
STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

<b>Structure Number</b>	<b>Milepost Marker</b>	<b>Length of Structure</b>	<b>County Code</b>	<b>Year Rehabbed</b>	<b>Estimated Cost Painting</b>	<b>(2009 Dollars) Rehabilitation</b>
@1-3	1.56	882.0	45	1980	\$ <u>350,000</u>	\$ <u>5,900,000</u>
<b>Subtotal</b>					<b>\$ 350,000</b>	<b>\$ 5,900,000</b>
+9-7	13.50	183.0	45	1986	18,000	240,000
+9-8	13.50	183.0	45	1986	18,000	255,000
@15-2	26.82	217.0	64	1986	-----	<u>2,010,000</u>
<b>Subtotal</b>					<b>\$ 36,000</b>	<b>\$ 2,505,000</b>
@15-1	26.46	187.0	64	1986	\$ 45,000	\$ 1,090,000
@15-3	26.98	234.0	64	1986	88,000	1,480,000
@15-4	27.91	125.0	64	1986	<u>16,000</u>	<u>800,000</u>
<b>Subtotal</b>					<b>\$ 149,000</b>	<b>\$ 3,370,000</b>
@21-1	50.03	133.0	46	1985	\$ 17,000	\$ 905,000
@21-2	51.07	120.0	46	1985	18,000	815,000
@23-2	58.56	117.0	46	1987	<u>14,000</u>	<u>770,000</u>
<b>Subtotal</b>					<b>\$ 49,000</b>	<b>\$ 2,490,000</b>
<b>Miscellaneous Bridge Painting</b>					<b>\$ 229,000</b>	
<b>(Account No's. 4220) 2011 TOTAL</b>					<b>\$ 813,000</b>	<b>\$ 14,265,000</b>
<b>(Account No's. 4220) 2011 GRAND TOTAL</b>					<b>\$ 15,078,000</b>	

@ Includes structure widening and deck replacement

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures  
County Code: See Page 118.

**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2012**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC OVER  
STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

Structure Number	Milepost Marker	Length of Structure	County Code	Year Rehabbed	Estimated Cost Painting	(2010 Dollars) Rehabilitation
@2-1	2.97	211.0	45	1980	----	\$ 2,750,000
@3/4-1	4.99	154.0	45	1985	----	<u>1,325,000</u>
<b>Subtotal</b>					----	<b>\$ 4,075,000</b>
@3/4-2	5.15	253.0	45	1985	----	\$ 2,175,000
@3/4-7	5.90	163.0	45	1985	----	<u>1,400,000</u>
<b>Subtotal</b>					----	<b>\$ 3,575,000</b>
@3/4-3	5.35	529.0	45	1985	----	\$ <u>4,550,000</u>
<b>Subtotal</b>					----	<b>\$ 4,550,000</b>
+16-2	29.94	237.0	64	1989	\$ 35,000	\$ 744,000
@16-8	32.49	136.0	64	1989	40,000	667,000
@17-2	34.01	116.0	64	1989	34,000	569,000
+18-4	38.83	244.0	46	1986	<u>35,000</u>	<u>750,000</u>
<b>Subtotal</b>					<b>\$ 178,000</b>	<b>\$ 2,730,000</b>
<b>Miscellaneous Bridge Painting</b>					<b>\$ 240,000</b>	----
<b>TOTAL</b>					<b>\$ 418,000</b>	<b>\$ 14,930,000</b>

(Account No's. 4220) 2012 GRAND TOTAL                      \$ 15,348,000

\* Record Unavailable

@ Includes structure widening and deck replacement

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures  
County Code: See Page 118.

**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2013**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC OVER  
STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

<b>Structure Number</b>	<b>Milepost Marker</b>	<b>Length of Structure</b>	<b>County Code</b>	<b>Year Rehabbed</b>	<b>Estimated Cost Painting</b>	<b>(2010 Dollars) Rehabilitation</b>
@3/4-5	5.49	336.0	45	1985	----	\$ 2,900,000
@3/4-6	5.74	238.0	45	1985	----	<u>2,050,000</u>
<b>Subtotal</b>					----	<b>\$ 4,950,000</b>
@5-1	6.04	174.0	45	1986	----	\$ 1,500,000
@6-1	7.0	225.0	45	1986	----	<u>1,950,000</u>
<b>Subtotal</b>					----	<b>\$ 3,450,000</b>
@6-2	7.52	114.0	45	1986	----	\$ 980,000
@6-3	8.0	312.0	45	1986	----	<u>2,700,000</u>
<b>Subtotal</b>					----	<b>\$ 3,680,000</b>
+17-1	33.50	115.0	64	1989	----	<u>1,400,000</u>
<b>Miscellaneous Bridge Painting</b>					<b>\$ 252,000</b>	----
<b>TOTAL</b>					<b>\$ 252,000</b>	<b>\$ 13,480,000</b>
<b>(Account No's. 4220) 2013 GRAND TOTAL</b>					<b>\$ 13,732,000</b>	

\* Record Unavailable

@ Includes structure widening and deck replacement

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures  
County Code: See Page 118.



**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2014**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC OVER  
STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

Structure Number	Milepost Marker	Length of Structure	County Code	Year Rehabbed	Estimated Cost Painting	(2012 Dollars) Rehabilitation
@11-4	19.98	176.0	45	1986	----	\$ 1,630,000
@11-5	20.4	171.0	45	1980	----	<u>1,850,000</u>
<b>Subtotal</b>					----	<b>\$ 3,480,000</b>
@20-1	47.49	176.0	46	1987	----	\$ 1,630,000
@20-2	48.17	277.0	46	1987	----	<u>2,570,000</u>
<b>Subtotal</b>					----	<b>\$ 4,200,000</b>
@22-4	56.91	221.0	46	1987	----	\$ 2,050,000
@24-A	61.63	117.0	71	1985	----	<u>1,085,000</u>
<b>Subtotal</b>					----	<b>\$ 3,135,000</b>
@25-B	67.07	113.0	71	1987	----	\$ 1,050,000
@25-C	68.08	121.0	71	1987	----	<u>1,120,000</u>
<b>Subtotal</b>					----	<b>\$ 2,170,000</b>
@27-C	75.80	215.0	71	1987	----	<u>3,600,000</u>
<b>Subtotal</b>					----	<b>\$ 3,600,000</b>
<b>Miscellaneous Bridge Painting</b>					<b>\$ 265,000</b>	----
<b>TOTAL</b>					<b>\$ 265,000</b>	<b>\$ 16,595,000</b>

(Account No's. 4220) 2014 GRAND TOTAL \$ 16,860,000

\* Record Unavailable

@ Includes structure widening and deck replacement

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures  
County Code: See Page 118.

**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2015**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC OVER  
STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

<b>Structure Number</b>	<b>Milepost Marker</b>	<b>Length of Structure</b>	<b>County Code</b>	<b>Year Rehabbed</b>	<b>Estimated Cost Painting</b>	<b>(2013 Dollars) Rehabilitation</b>
@29-1	76.56	155.0	71	1987	----	1,350,000
@29-2	76.71	198.0	71	1987	----	<u>1,750,000</u>
<b>Subtotal</b>					----	<b>\$ 3,100,000</b>
@28-1	75.97	492.0	71	1987	----	<u>4,450,000</u>
<b>Subtotal</b>					----	<b>\$ 4,450,000</b>
@37-6	104.79	121.0	20	1988	----	1,120,000
@44-1	122.06	148.0	44	1984	----	1,370,000
@46-2	127.72	122.0	44	1988	----	1,130,000
<b>Subtotal</b>					----	<b>\$ 3,620,000</b>
<b>Miscellaneous Bridge Painting</b>					<b>\$ 278,000</b>	----
<b>TOTAL</b>					<b>\$ 278,000</b>	<b>\$ 11,170,000</b>
<b>(Account No's. 4220) 2015 GRAND TOTAL</b>					<b>\$ 11,448,000</b>	

\* Record Unavailable

@ Includes structure widening and deck replacement

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures  
County Code: See Page 118.

**TOLL ROAD BRIDGE NEEDS  
FISCAL YEAR 2016**

**TOLL ROAD OVER (TRO) STRUCTURES CARRYING ITR TRAFFIC  
OVER STATE ROUTES, STREETS, RIVERS, RAILROADS, ETC.**

Structure Number	Milepost Marker	Length of Structure	County Code	Year Rehabbed	Estimated Cost Painting	(2014 Dollars) Rehabilitation
@2-2	3.29	364.0	45	1988	----	\$ 3,200,000
+2-5	4.60	213.0	45	1988	----	<u>\$ 1,200,000</u>
				<b>Subtotal</b>	----	<b>\$ 4,400,000</b>
@7-5	10.01	216.0	45	1988	----	2,000,000
				<b>Subtotal</b>	----	<b>\$ 2,000,000</b>

**TOLL ROAD UNDER (TRU) STRUCTURES CARRYING  
STATE ROUTES, SELECTED ARTERIALS, LOCAL ROADS AND STREETS OVER THE ITR**

Structure Number	Milepost Marker	Length of Structure	County Code	Year Rehabbed	Estimated Cost Painting	(2014 Dollars) Rehabilitation
20-4	49.32	263.0	46	1986	----	\$ 950,000
22-3	56.13	318.0	46	1987	----	<u>1,000,000</u>
				<b>Subtotal</b>	----	<b>\$ 1,950,000</b>
30-5	81.50	249.0	71	1988	----	\$ 850,000
30-6	82.07	349.0	71	1988	----	<u>950,000</u>
				<b>Subtotal</b>	----	<b>\$ 1,800,000</b>
38-1	106.97	240.0	20	1988	----	\$ 1,300,000
38-2	107.31	220.0	20	1985	----	<u>730,000</u>
				<b>Subtotal</b>	<u>----</u>	<b><u>\$ 2,030,000</u></b>
Miscellaneous Bridge Painting					\$ 292,000	----
<b>TOTAL</b>					<b>\$ 292,000</b>	<b>\$ 12,180,000</b>

(Account No's. 4220 & 4225) 2016 GRAND TOTAL \$ 12,472,000

@ Includes structure widening and deck replacement

+ Denotes a Toll Road Under Structure which will be grouped in the same contract as Toll Road Over Structures  
County Code: See Page 118.

## BRIDGE STRUCTURES REHABILITATED TO DATE

Year	Structure Number
1979	(4) 34-5EB&WB, 35-4EB&WB
1980	(10) 1-3EB&WB, 1-4EB&WB, 2-1EB&WB, 10-5EB&WB, 11-5EB&WB
1981	(3) 8-3EB&WB, 169-156-4820A
1982	(1) 43-2*
1983	(14) 35-1EB&WB, 43-3EB&WB*, 43-4EB&WB*, 43-5EB&WB*, 48-2EB&WB, 50-10EB&WB, 51-2EB&WB
1984	(31) °7-1B, 9-1EB&WB*, 9-3EB, 9-4 EB, 10-2WB, °16-3, 31-1EB&WB*, 32-6EB&WB*, 33-1EB&WB, 36-1EB&WB, 37-2EB&WB, 37-3EB&WB, 44-1EB&WB, 51-6EB&WB, 51-7EB&WB, 53-3EB&WB*, 53-5EB&WB*, 53-8EB&WB*
1985	(35) 1A3-2EB&WB, 1-2EB&WB*, 2-3EB&WB, 2-4EB&WB, 3/4-1EB&WB, 3/4-2EB&WB, 3/4-3EB&WB, 3/4-5EB&WB, 3/4-6EB&WB, 3/4-7EB&WB, 9-6, 10-2EB, 10-3, 10-4, 10-6, 10-7EB&WB*, 21-1EB&WB, 21-2EB&WB, 24-AEB&WB, 37-1, 38-2
1986	(29) 5-1EB&WB, 5-2EB&WB, 6-1EB&WB, 6-2EB&WB, 6-3EB&WB, 9-5, 9-7, 9-8, 11-1, 11-2EB&WB, 11-3, 11-4EB&WB, 15-1EB&WB, 15-2EB&WB, 15-3EB&WB, 15-4EB&WB, 18-4, 20-4
1987	(27) I80-15-5262B, I80-15-5263B, BHX-A, BHX-B, 20-1EB&WB, 20-2EB&WB, 20-3EB&WB, 22-3, 22-4EB&WB, 23-2EB&WB, 25-BEB&WB, 25-CEB&WB, 27-CEB&WB, 28-1EB&WB, 29-1EB&WB, 29-2EB&WB. (Paint only; 31-3, 31-5, 32-1, 32-3, 32-4 and 32-5).
1988	(31) 2-2EB&WB, 2-5, 7-5EB&WB, 8-2EB&WB, 8-5EB&WB, 8-6EB&WB, 8-7EB&WB, 9-3WB, 9-4WB, 27-A NB, 27-B, 30-5, 30-6, 34-2, 37-6EB&WB, 38-1, 42-1EB&WB, 43-1EB&WB*, 46-2EB&WB, 47-1EB&WB. (Paint only; 9-3 EB, 9-4 EB).
1989	(29) 1A-1, 1A-2*, 1A3-1, 10A-1, 12-1EB&WB, 13-3EB&WB, 13-5EB&WB, 13-6, 14-1EB&WB, 14-3EB&WB, 14-4EB&WB, 14-6EB&WB, 16-2, 16-8EB&WB, 17-1EB&WB, 17-2EB&WB, 17-5EB&WB, °21-4** (Structure 13-5.9 has been deleted from inventory).
1990	(1) °34-1
1991	(8) 29-4EB&WB, 29-7EB&WB, 30-2EB&WB, 49-5EB&WB
1992	(5) 50-8EB&WB, 50-9EB&WB, 51-1
1993	(4) 10-7EB&WB*, 49-6EB&WB
1994	(6) 18-7EB&WB, 19-1EB&WB, 19-4EB&WB
1995	(10) 1-2EB&WB*, 19-5, 21-3, 22-2, 40/41-1EB&WB (29-9E, 29-9HF, 29-5 were removed.)
1996	(10) 13-2, 14-5, 17-4, 19-3, 22-1, 43-6, 45-1, 45-5, 45-6, 46-1
1997	(11) 9-1EB&WB*, 15-5, 15-8, 16-1, 16-5, 38-3, 39-1, 39-2, 39-3, 39-4
1998	(9) 19-2, 23-1, 23-3, 23-4, 32-6EB&WB*, 52-2, 52-3, 52-5
1999	(16) 17-7, 18-3, 18-6, 18-8, 31-1EB&WB*, 53-3EB&WB*, 53-5EB&WB*, 53-8EB&WB* (43-1EB&WB* & 43-4 EB&WB* were removed)
2000	(23) 40/41-2, 40/41-3, 40/41-4, 40/41-5, 40/41-6, 43-2*, 43-3EB&WB*, 43-5EB&WB*, 46-4, 48-1, 48-1A, 49-3, 49-4, 50-7, 50-7A, 51-5, 52-6, 53-1, 53-2, 53-6, 53-9
2001	(15) 24-B, 24-C, 25-A, 26-A, 26-B, 31-3, 31-5, 32-1, 32-3, 32-4, 32-5, 34-3 (1A-2*, 10-1 & 18-2 were removed)
2002	(9) 30-1 NBL, 30-1 SBL, 30-3 NBL, 30-3 SBL, 34-8, 34-9, 35-2, 35-5, 37-4
2003	(4) 10-5EB&WB*‡, 18-5, 26-C
2004	(10) 17-5EB&WB*, 34-5EB&WB*, 35-1EB&WB*, 51-6EB&WB*, 51-7EB&WB*
2005	(12) 10-2EB&WB*‡, 11-1‡, 11-2‡, 37-2EB&WB*, 37-3EB&WB*, 50-10EB&WB*, 51-2EB&WB*,
<b>TOTAL</b>	<b>(367) (Includes 4 bridges maintained and inspected by others and 50 duplicate structures rehabilitated in previous years and 2 bridges maintained by others and inspected by Toll Road)</b>

\*\* Funded by Transportation Improvement Fund  
 ° Rehabilitation and maintenance by Indiana Department of Transportation  
 ( ) Indicates Number of Bridges Rehabilitated  
 \* Duplicate structures rehabilitated in previous years  
 ‡ Reconstructed in 2000 Additional Project

### **BRIDGE STRUCTURES MAINTAINED BY OTHERS**

- (1) 7-1B (TRU SR912/Cline Ave.)
- (1) 16-3 (TRU SR 49)
- (1) 21-4 (TRU US 20)
- (1) 34-1 (TRU SR 19)
- (1) 1-80-16 (TRU I-94)
- (1) 31-71-5807N (TRU US 31 Bypass)
- (1) 31-71-5807S (TRU US 31 Bypass)

**TOTAL (7)**

### **BRIDGE STRUCTURES MAINTAINED BY OTHERS/INSPECTED BY TOLL ROAD**

- (1) 7-1A (TRU CSS&SB RR)
- (1) 27-A-SBL (TRU Bendix Dr.)
- (1) 13-6 (TRU Willowcreek Rd.)
- (1) 27-B (TRU Portage Rd.)
- (1) 30-3.5 (TRU Main St.) (Built in 1993)
- (2) 30-6.5 NBL and SBL (TRU SR 331/Capital Ave.) (Built in 1994)

**TOTAL (7)**

### **NEW BRIDGE STRUCTURES**

<b><u>YEAR</u></b>	<b><u>TOTAL STRUCTURES</u></b>	<b><u>STRUCTURE NUMBER</u></b>
* 1980	(18)	03(04)ML, 03(03)WN, 03(02)RR, 10(01)RR, 10(02)WX, 10(03)EX, 10(04)EN, 10(05)WN, 10(06)ML, 10(07)RR, 23(01)ML, 31-71-6792, SB-WX-1, 83(01)ML, 101(01)ML
1984	(2)	6603, 6603J
1996	(1)	35-1.3 (TRU CR 17)
1997	<u>(1)</u>	35-1.6 (TRU Ramps - Exit 96)
2003	<u>(1)</u>	10-5.5 (I-65 over Ramp H - TR Exit 17)
2005	<u>(1)</u>	10-1T (TRO Taylor Road - Tunnel)
<b>TOTAL</b>	<b>(24)</b>	* 1980 Indiana Toll Road Improvement Program

### **DEMOLISHED STRUCTURES**

1995	(3)	29-9E, 29-9HF, 29-5
1999	(4)	43-1 EB & WB, 43-4 EB & WB
2001	<u>(3)</u>	1A-2, 10-1, 18-2
2004	<u>(2)</u>	17-5 EB & WB
<b>TOTAL</b>	<b>(12)</b>	

## PROPOSED REHABILITATION FOR BRIDGE STRUCTURES

Year	Structure Number
2007	(12) *1A3-2 EBL & WBL, *1-4 EBL & WBL, *2-3 EBL & WBL, *2-4 EBL & WBL, *35-4 EBL & WBL, *47-1 EBL & WBL
2008	(4) ‡9-1 EBL, *10-7 EBL, *36-1 EBL & WBL
2009	(4) ‡9-1 WBL, *10-7 WBL, *I69-156-4820A, 53-7
2010	(6) *8-5 EBL & WBL, *8-6 EBL & WBL, *8-7 EBL & WBL
2011	(18) *1-3 EBL & WBL, *9-7, *9-8, *15-1 EBL & WBL, *15-2 EBL & WBL, *15-3 EBL & WBL, *15-4 EBL & WBL, *21-1 EBL & WBL, *21-2 EBL & WBL, *23-2 EBL & WBL
2012	(16) *2-1 EBL & WBL, *3/4-1 EBL & WBL, *3/4-2 EBL & WBL, *3/4-3 EBL & WBL, *3/4-7 EBL & WBL, *16-2, *16-8 EBL & WBL, *17-2 EBL & WBL, *18-4
2013	(14) *3/4-5 EBL & WBL, *3/4-6 EBL & WBL, *5-1 EBL & WBL, *6-1 EBL & WBL, *6-2 EBL & WBL, *6-3 EBL & WBL, *17-1 EBL & WBL
2014	(18) *11-4 EBL & WBL, *11-5 EBL & WBL, *20-1 EBL & WBL, *20-2 EBL & WBL, *22-4 EBL & WBL, *24-A EBL & WBL, *25-B EBL & WBL, *25-C EBL & WBL, *27-C EBL & WBL
2015	(12) *28-1 EBL & WBL, *29-1 EBL & WBL, *29-2 EBL & WBL, *37-6 EBL & WBL, *44-1 EBL & WBL, *46-2 EBL & WBL
2016	(11) *2-2 EBL & WBL, *2-5, *7-5 EBL & WBL, *20-4, *22-3, *30-5, *30-6, *38-1, *38-2
<b>TOTAL</b>	<b>(115) (Includes 114 duplicate structures rehabilitated in previous years)</b>

( ) Indicates Number of Bridges to be rehabilitated

\* Duplicate structures rehabilitated in previous years

‡ Structures included in Project 2000 - Demolition, Rehabilitation and Replacement  
(Toll Road EB & WB over Broadway, Virginia Ave. and E.J.&E.R.R.)

### BRIDGE SUMMARY

TOTAL BRIDGES	DESCRIPTION	TOTAL BRIDGES ON TOLL ROAD	TOTAL BRIDGES TOLL ROAD IS RESPONSIBLE FOR INSPECTING
367	Bridges Rehabilitated (Includes 4 bridges maintained and inspected by others, 50 duplicate structures rehabilitated in previous years and 2 structures maintained by others and inspected by Toll Road.)	311	311
24	New Structures	24	24
115	Bridges in Proposed Rehabilitation Program (114 duplicate structures rehabilitated in previous years.)	1	1
7	Bridges Maintained and Inspected by Others (Not in proposed rehabilitation program.)	7	0
7	Bridges Maintained Others/ Inspected by Toll Road	7	7
(12)	Demolished Structures	(12)	(12)
<b>508</b>	<b>TOTALS</b>	<b>338</b>	<b>331</b>

508      Total Bridges (Includes 4 bridges maintained and inspected by others, 164 duplicate structures rehabilitated in previous years, and 2 structures maintained by others and inspected by Toll Road.)

338      Total Bridges on Toll Road.

331      Total Bridges Toll Road is responsible for inspection.

## BRIDGE REHABILITATION SUMMARY

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
1A-1	1989	Z/V
1A3-1	1989	Z/V
1A3-2 EBL	1985 (2007)	Z/V
1A3-2 WBL	1985 (2007)	Z/V
1-2 EBL	1985 1995	Z/V
1-2 WBL	1985 1995	Z/V
1-3 EBL	1983 (2011)	Z/V
1-3 WBL	1983 (2011)	Z/V
1-4 EBL	1983 (2007)	Z/V
1-4 WBL	1983 (2007)	Z/V
2-1 EBL	1983 (2012)	Z/V
2-1 WBL	1983 (2012)	Z/V
2-2 EBL	1988 (2016)	Z/V
2-2 WBL	1988 (2016)	Z/V
03(04)ML	\$	Z/V
03(03)WN	\$	Z/V
03(02)RR	\$	Z/V
6603	1984-NEW	NA
6603J	1984-NEW	NA
2-3 EBL	1985 (2007)	Z/V
2-3 WBL	1985 (2007)	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
2-4 EBL	1985 (2007)	Z/V
2-4 WBL	1985 (2007)	Z/V
2-5	1988 (2016)	Z/V
3/4-1 EBL	1985 (2012)	Z/V
3/4-1 WBL	1985 (2012)	Z/V
3/4-2 EBL	1985 (2012)	Z/V
3/4-2 WBL	1985 (2012)	Z/V
3/4-3 EBL	1985 (2012)	Z/V
3/4-3 WBL	1985 (2012)	Z/V
3/4-5 EBL	1985 (2013)	Z/V
3/4-5 WBL	1985 (2013)	Z/V
3/4-6 EBL	1985 (2013)	Z/V
3/4-6 WBL	1985 (2013)	Z/V
3/4-7 EBL	1985 (2012)	Z/V
3/4-7 WBL	1985 (2012)	Z/V
5-1 EBL	1986 (2013)	Z/V
5-1 WBL	1986 (2013)	Z/V
5-2 EBL	1986	Z/V
5-2 WBL	1986	Z/V
6-1 EBL	1986 (2013)	Z/V
6-1 WBL	1986 (2013)	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
6-2 EBL	1986 (2013)	Z/V
6-2 WBL	1986 (2013)	Z/V
6-3 EBL	1986 (2013)	Z/V
6-3 WBL	1986 (2013)	Z/V
7-1A	----	RLP
7-1B	1984*	RLP
7-5 EBL	1988 (2016)	Z/V
7-5 WBL	1988 (2016)	Z/V
10(01)RR EBL	\$	Z/V
10(01)RR WBL	\$	Z/V
10(02) WX	\$	Z/V
10(03) EX	\$	Z/V
10(04) EN	\$	Z/V
10(05) WN	\$	Z/V
10(06)ML EBL	\$	Z/V
10(06)ML WBL	\$	Z/V
10(07)RR EBL	\$	Z/V
10(07)RR WBL	\$	Z/V
8-2 EBL	1988	Z/V
8-2 WBL	1988	Z/V
8-3 EBL	1981	Z/V



## BRIDGE REHABILITATION SUMMARY

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
8-3 WBL	1981	Z/V
8-5 EBL	1988 (2010)	Z/V
8-5 WBL	1988 (2010)	Z/V
8-6 EBL	1988 (2010)	Z/V
8-6 WBL	1988 (2010)	Z/V
8-7 EBL	1988 (2010)	Z/V
8-7 WBL	1988 (2010)	Z/V
9-8	1986 (2011)	Z/V
9-7	1986 (2011)	Z/V
9-6	1985	Z/V
9-5	1986	Z/V
9-4 EBL	1984	Z/V
9-4 WBL	1988	Z/V
9-3 EBL	1984	Z/V
9-3 WBL	1988	Z/V
9-1 EBL	1984 1997 (2008)	Z/V
9-1 WBL	1984 1997 (2009)	Z/V
10-7 EBL	1985 1993 (2008)	Z/V
10-7 WBL	1985 1993 (2009)	Z/V
10-1T	2005	NA
10-2 EBL	2004	WS

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
10-2 WBL	2004	WS
10-3	2003	WS
10-4	2003	WS
10-5 EBL	2003	WS
10-5 WBL	2003	WS
10-6	2003	WS
10-5.5	2003	WS
10A-1	2004	WS
11-1	2004	WS
11-2 EBL	2004	WS
11-2 WBL	2004	WS
11-3	1986	Z/V
11-4 EBL	1986 (2014)	Z/V
11-4 WBL	1986 (2014)	Z/V
11-5 EBL	1984 (2014)	Z/V
11-5 WBL	1984 (2014)	Z/V
I-80-15-5262B	1987	Z/V
1-80-15-5263B	1987	NA
BHX-B	1987	Z/V
BHX-A	1987	Z/V
12-1 EBL	1989	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
12-1 WBL	1989	Z/V
I-80-16	*	Z/V
13-2	1996	ERL
13-3 EBL	1989	Z/V
13-3 WBL	1989	Z/V
13-5 EBL	1989	Z/V
13-5 WBL	1989	Z/V
13-6	1989 *C	Z/V
23(01)ML	\$	Z/V
14-1 EBL	1989	Z/V
14-1 WBL	1989	Z/V
14-3 EBL	1989	Z/V
14-3 WBL	1989	Z/V
14-4 EBL	1989	Z/V
14-4 WBL	1989	Z/V
14-6 EBL	1989	Z/V
14-6 WBL	1989	Z/V
14-5	1996	ERL
15-1 EBL	1986 (2011)	Z/V
15-1 WBL	1986 (2011)	Z/V
15-2 EBL	1986 (2011)	Z/V

## BRIDGE REHABILITATION SUMMARY

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
15-2 WBL	1986 (2011)	Z/V
15-3 EBL	1986 (2011)	Z/V
15-3 WBL	1986 (2011)	Z/V
15-4 EBL	1986 (2011)	Z/V
15-4 WBL	1986 (2011)	Z/V
15-5	1997	ERL
15-8	1997	ERL
16-1	1997	ERL
16-2	1989 (2012)	Z/V
16-3	1984*	Z/V
16-5	1997	ERL
16-8 EBL	1989 (2012)	Z/V
16-8 WBL	1989 (2012)	Z/V
17-1 EBL	1989 (2013)	Z/V
17-1 WBL	1989 (2013)	Z/V
17-2 EBL	1989 (2012)	Z/V
17-2 WBL	1989 (2012)	Z/V
17-4	1996	ERL
17-5 EBL	1989 (Demo 2004)	Z/V
17-5 WBL	1989 (Demo 2004)	Z/V
17-7	1999	ERL

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
18-3	1999	ERL
18-4	1986 (2012)	Z/V
18-5	2003	Z/V
18-6	1999	EZV
18-7 EBL	1994	Z/V
18-7 WBL	1994	Z/V
18-8	1999	EZV
19-1 EBL	1994	Z/V
19-1 WBL	1994	Z/V
19-2	1998	EZV
19-3	1996	ERL
19-4 EBL	1994	Z/V
19-4 WBL	1994	Z/V
19-5	1995	ERL
20-1 EBL	1987 (2014)	Z/V
20-1 WBL	1987 (2014)	Z/V
20-2 EBL	1987 (2014)	Z/V
20-2 WBL	1987 (2014)	Z/V
20-3 EBL	1987	Z/V
20-3 WBL	1987	Z/V
20-4	1986 (2016)	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
21-1 EBL	1985 (2011)	Z/V
21-1 WBL	1985 (2011)	Z/V
21-2 EBL	1985 (2011)	Z/V
21-2 WBL	1985 (2011)	Z/V
21-3	1995	EZV
21-4	*1989	Z/V
22-1	1996	ERL
22-2	1995	ERL
22-3	1987 (2016)	Z/V
22-4 EBL	1987 (2014)	Z/V
22-4 WBL	1987 (2014)	Z/V
23-1	1998	ERL
23-2 EBL	1987 (2011)	Z/V
23-2 WBL	1987 (2011)	Z/V
23-3	1998	ERL
23-4	1998	ERL
24-A EBL	1985 (2014)	Z/V
24-A WBL	1985 (2014)	Z/V
24-B	2001	Z/V
24-C	2001	Z/V
25-A	2001	Z/V

## BRIDGE REHABILITATION SUMMARY

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
25-B EBL	1987 (2014)	Z/V
25-B WBL	1987 (2014)	Z/V
25-C EBL	1987 (2014)	Z/V
25-C WBL	1987 (2014)	Z/V
26-A	2001	Z/V
26-B	2001	Z/V
26-C	2003	WS
31-71-5807N	*	Z/V
31-71-5807S	*	Z/V
31-71-6792	\$	NA
SB-WX-1	\$	NA
27-A-NBL	1988	Z/V
27-A-SBL	* C	RLP
27-B	1994 * C	Z/V
27-C EBL	1987 (2014)	Z/V
27-C WBL	1987 (2014)	Z/V
28-1 EBL	1987 (2015)	Z/V
28-1 WBL	1987 (2015)	Z/V
29-1 EBL	1987 (2015)	Z/V
29-1 WBL	1987 (2015)	Z/V
29-2 EBL	1987 (2015)	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
29-2 WBL	1987 (2015)	Z/V
29-4 EBL	1990	Z/V
29-4 WBL	1990	Z/V
29-7 EBL	1990	Z/V
29-7 WBL	1990	SW
30-1 NBL	2002	Z/V
30-1 SBL	2002	Z/V
30-2 EBL	1990	SW
30-2 WBL	1990	SW
30-3 NBL	2002	Z/V
30-3 SBL	2002	Z/V
30-3.5	1993-NEW *C	Z/V
30-5	1988 (2016)	Z/V
30-6	1988 (2016)	Z/V
30-6.5 NBL	1993-NEW *C	Z/V
30-6.5 SBL	1993-NEW *C	Z/V
83(01)ML	\$	Z/V
31-1 EBL	1984 1999	Z/V
31-1 WBL	1984 1999	Z/V
31-3	2001	Z/V
31-5	2001	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
32-1	2001	Z/V
32-3	2001	Z/V
32-4	2001	Z/V
32-5	2001	Z/V
32-6 EBL	1984 1998	NA
32-6 WBL	1984 1998	NA
33-1 EBL	1984 2004	Z/V
33-1 WBL	1984 2004	Z/V
34-1	* 1990	Z/V
34-2	1988	Z/V
34-3	2001	Z/V
34-5 EBL	1979 2004	Z/V
34-5 WBL	1979 2004	Z/V
34-8	2002	Z/V
34-9	2002	Z/V
35-1 EBL	1983 2004	Z/V
35-1 WBL	1983 2004	Z/V
35-1.3	1996-NEW	Z/V
35-1.6	1997-NEW	WS
35-2	2002	Z/V
35-4 EBL	1979 (2007)	Z/V

## BRIDGE REHABILITATION SUMMARY

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
35-4 WBL	1979 (2007)	Z/V
35-5	2002	Z/V
36-1 EBL	1984 (2008)	Z/V
36-1 WBL	1984 (2008)	Z/V
37-1	1985 2003	Z/V
101(01)ML	\$	Z/V
37-2 EBL	1984 2005	Z/V
37-2 WBL	1984 2005	Z/V
37-3 EBL	1984 2005	Z/V
37-3 WBL	1984 2005	Z/V
37-4	2002	Z/V
37-6 EBL	1988 (2015)	Z/V
37-6 WBL	1988 (2015)	Z/V
38-1	1988 (2016)	Z/V
38-2	1985 (2016)	Z/V
38-3	1997	Z/V
39-1	1997	Z/V
39-2	1997	Z/V
39-3	1997	Z/V
39-4	1997	Z/V
40/41-1 EBL	1995	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
40/41-1 WBL	1995	Z/V
40/41-2	2000	Z/V
40/41-3	2000	Z/V
40/41-4	2000	Z/V
40/41-5	2000	Z/V
40/41-6	2000	Z/V
42-1 EBL	1988	Z/V
42-1 WBL	1988	Z/V
43-2	1982 2000	WS
43-3 EBL	1983 2000	WS
43-3 WBL	1983 2000	WS
43-5 EBL	1983 2000	ZV
43-5 WBL	1983 2000	ZV
43-6	1996	ERL
44-1 EBL	1984 (2015)	Z/V
44-1 WBL	1984 (2015)	Z/V
45-1	1996	ERL
45-5	1996	Z/V
45-6	1996	Z/V
46-1	1996	Z/V
46-2 EBL	1988 (2015)	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
46-2 WBL	1988 (2015)	Z/V
46-4	2000	Z/V
47-1 EBL	1988 (2007)	Z/V
47-1 WBL	1988 (2007)	Z/V
48-1	2000	Z/V
48-1A	2000	Z/V
48-2 EBL	1983	Z/V
48-2 WBL	1983	Z/V
49-3	2000	Z/V
49-4	2000	Z/V
49-5 EBL	1991	Z/V
49-5 WBL	1991	Z/V
49-6 EBL	1993	Z/V
49-6 WBL	1993	Z/V
50-7	2000	Z/V
50-7A	2000	Z/V
50-8 EBL	1992	Z/V
50-8 WBL	1992	Z/V
50-9 EBL	1992	Z/V
50-9 WBL	1992	Z/V
I69-156-4820A	1981 (2009)	RLP

## BRIDGE REHABILITATION SUMMARY

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
50-10 EBL	1983 2005	Z/V
50-10 WBL	1983 2005	Z/V
51-1	1992	Z/V
51-2 EBL	1983 2005	Z/V
51-2 WBL	1983 2005	Z/V
51-5	2000	Z/V
51-6 EBL	1984 2004	Z/V
51-6 WBL	1984 2004	Z/V
51-7 EBL	1984 2004	Z/V

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
51-7 WBL	1984 2004	Z/V
52-2	1999	Z/V
52-3	1999	Z/V
52-5	1999	Z/V
52-6	2000	Z/V
53-1	2000	Z/V
53-2	2000	Z/V
53-3 EBL	1984 1999	NA
53-3 WBL	1984 1999	NA

BRIDGE NO.	YEAR OF REHAB.	PAINT TYPE
53-5 EBL	1984 1999	NA
53-5 WBL	1984 1999	NA
53-6	2000	Z/V
53-7	(2009)	NA
53-8 EBL	1984 1999	NA
53-8 WBL	1984 1999	NA
53-9	2000	Z/V

Z/V Zinc Vinyl Paint  
 RLP Red Lead Paint  
 SW Sherwin Williams Paint System E-39K  
 ERL Encapsulation Bridge Painting System over red lead paint.  
 EZV Encapsulation Bridge Painting System over zinc vinyl paint.  
 ( ) Proposed year for rehabilitation  
 \$ New structures 1980 project  
 \* Maintained by Others  
 C Bridges inspected by Toll Road.  
 WS Weathering Steel (No Paint)  
 NA Not Applicable (No Steel)  
 (√) Rehabilitated or reconstructed in Additional Project 2000

## 4.3

**PAVEMENT RESURFACING PROGRAM (1)**

**ACCOUNT NO. 4330  
FISCAL YEARS 2006 - 2015**

<b>FISCAL YEAR</b>	<b>LANE MILES</b>	<b>ESTIMATED COST</b>
2006	18.8	7,700,000 (4)(5)
2007	59.2	9,600,000 (3)(4)(5)
2008	70.0	8,700,000 (3)(4)
2009	68.8	9,600,000 (3)
2010	71.8	10,100,000 (3)
2011	64.7	9,500,000
2012	67.8	10,100,000
2013	65.7	11,800,000
2014	54.6	10,700,000
2015	66.2	12,500,000

**Notes**

- (1) This schedule requires 10 years to resurface the entire mainline pavement. The typical overlay interval for asphalt pavements is 7-10 years, as it is reasonable to assume a traditional resurfacing program will be ongoing.
- (2) Includes funding for interchange improvements at various locations. See Resurfacing Schedule (Section 2.2.E - Mainline Pavement).
- (3) Includes \$500,000 for interchange revisions and ramp resurfacing.
- (4) Includes funding for upgrading Striping, Signing and Lighting at various locations. (Section 2.2.E - Mainline Pavement).
- (5) Includes funding for the relocation of the Mainline Barrier Toll Plaza at MP 24 (Section 2.2.E - Mainline Pavement).

#### 4.4 BUILDING PROGRAM

ACCOUNT NUMBER	MAJOR BUILDING AND REPAIRS	COST
<b>FISCAL YEAR 2007</b>		
4440	Miscellaneous Major Building Maintenance	300,000
4440	Reloc. Mainline Barrier Toll Plaza - Service Bldg. & Tollbooths	1,200,000
4440	Misc. Equipment Maintenance - TP's & MA's	50,000
4440	Miscellaneous Roof Replacements	300,000
4440	District 11 - ISP Post	2,000,000
<b>TOTAL - FY 2007</b>		<b>\$ 3,850,000</b>
<b>FISCAL YEAR 2008</b>		
4440	Miscellaneous Major Building Rehabilitation	2,100,000
4440	Misc. Equipment Maintenance - TP's & MA's	90,000
4440	Misc. Grounds Maintenance - TP's & MA's	100,000
4440	Miscellaneous Roof Replacements	700,000
<b>TOTAL - FY 2008</b>		<b>\$2,990,000</b>
<b>FISCAL YEAR 2009</b>		
4440	Miscellaneous Major Building Rehabilitation	2,500,000
4440	Misc. Equipment Maintenance - TP's & MA's	70,000
4440	Misc. Grounds Maintenance - TP's & MA's	70,000
4440	Miscellaneous Roof Replacements	500,000
<b>TOTAL - FY 2009</b>		<b>\$ 3,140,000</b>
<b>FISCAL YEAR 2010</b>		
4440	Miscellaneous Major Building Rehabilitation	\$ 2,400,000
4440	Misc. Equipment Maintenance - TP's & MA's	100,000
4440	Misc. Grounds Maintenance - TP's & MA's	97,000
4440	Miscellaneous Roof Replacements	700,000
<b>TOTAL - FY 2010</b>		<b>\$ 3,297,000</b>

<b>ACCOUNT NUMBER</b>	<b>WATER TREATMENT PLANTS</b>	<b>COST</b>
<b>FISCAL YEAR 2007</b>		
4420	Misc. Rehabilitation Water Treatment Plants	\$ 575,000
<b>TOTAL - FY 2007</b>		<b>\$ 575,000</b>
<b>FISCAL YEAR 2008</b>		
4420	Misc. Rehabilitation Water Treatment Plants	\$ 600,000
<b>TOTAL - FY 2008</b>		<b>\$ 600,000</b>
<b>FISCAL YEAR 2009</b>		
4420	Misc. Rehabilitation Water Treatment Plants	\$ 630,000
<b>TOTAL - FY 2009</b>		<b>\$ 630,000</b>
<b>FISCAL YEAR 2010</b>		
4420	Misc. Rehabilitation Water Treatment Plants	\$ 662,000
<b>TOTAL - FY 2010</b>		<b>\$ 662,000</b>



<b>ACCOUNT NUMBER</b>	<b>SEWAGE DISPOSAL PLANTS</b>	<b>COST</b>
<b>FISCAL YEAR 2007</b>		
4423	Misc. Rehabilitation Sewage Disposal Plants	\$ 700,000
<b>TOTAL - FY 2007</b>		<b>\$ 700,000</b>
<b>FISCAL YEAR 2008</b>		
4423	Misc. Rehabilitation Sewage Disposal Plants	\$ 720,000
<b>TOTAL - FY 2008</b>		<b>\$ 720,000</b>
<b>FISCAL YEAR 2009</b>		
4423	Misc. Rehabilitation Sewage Disposal Plants	\$ 760,000
<b>TOTAL - FY 2009</b>		<b>\$ 760,000</b>
<b>FISCAL YEAR 2010</b>		
4423	Misc. Rehabilitation Sewage Disposal Plants	\$ 798,000
<b>TOTAL - FY 2010</b>		<b>\$ 798,000</b>

<b>ACCOUNT NUMBER</b>	<b>TRAVEL PLAZA GROUNDS</b>	<b>COST</b>
<b>FISCAL YEAR 2007</b>		
4436	Travel Plazas - Rehabilitate Grounds	\$ 650,000
4436	Travel Plazas - Misc. Ground Maintenance	240,000
<b>TOTAL - FY 2007</b>		<b>\$ 890,000</b>
<b>FISCAL YEAR 2008</b>		
4436	Travel Plazas - Rehabilitate Grounds	\$ 680,000
4436	Travel Plazas - Misc. Ground Maintenance	255,000
<b>TOTAL - FY 2008</b>		<b>\$ 935,000</b>
<b>FISCAL YEAR 2009</b>		
4436	Travel Plazas - Rehabilitate Grounds	\$ 700,000
4436	Travel Plazas - Misc. Ground Maintenance	280,000
<b>TOTAL - FY 2009</b>		<b>\$ 980,000</b>
<b>FISCAL YEAR 2010</b>		
4436	Travel Plazas - Rehabilitate Grounds	\$ 729,000
4436	Travel Plazas - Misc. Ground Maintenance	300,000
<b>TOTAL - FY 2010</b>		<b>\$ 1,029,000</b>

<b>ACCOUNT NUMBER</b>	<b>CHEMICAL STORAGE AREAS</b>	<b>COST</b>
<b>FISCAL YEAR 2007</b>		
4560	Chemical Storage Areas - Unknown Spills	\$ 145,000
4560	Chemical Storage Areas - Miscellaneous Work	65,000
<b>TOTAL - FY 2007</b>		<b>\$ 210,000</b>
<b>FISCAL YEAR 2008</b>		
4560	Chemical Storage Areas - Unknown Spills	\$ 155,000
4560	Chemical Storage Areas - Miscellaneous Work	65,000
<b>TOTAL - FY 2008</b>		<b>\$ 220,000</b>
<b>FISCAL YEAR 2009</b>		
4560	Chemical Storage Areas - Unknown Spills	\$ 165,000
4560	Chemical Storage Areas - Miscellaneous Work	65,000
<b>TOTAL - FY 2009</b>		<b>\$ 230,000</b>
<b>FISCAL YEAR 2010</b>		
4560	Chemical Storage Areas - Unknown Spills	\$ 170,000
4560	Chemical Storage Areas - Miscellaneous Work	72,000
<b>TOTAL - FY 2010</b>		<b>\$ 242,000</b>

APPENDIX A

OPI MEASURES

## OPI Measure

<b>Topic Name:</b>	Pavement Conditions
<b>Measure Name:</b>	Percent Lane Miles with PQI in Acceptable Condition
<b>Description:</b>	The Pavement Condition Measure tracks the Toll Road's ability to provide quality roadways and achieve pavement condition goals.
<b>Background:</b>	<p>The pavement on the Indiana Toll Road is inspected annually and is divided into three categories:</p> <ul style="list-style-type: none"><li>• <b>Mainline Pavement</b> - Defined as the entire pavement associated with the Travel Plaza primarily the parking lot but also the entrance and exit ramps for the Travel Plazas.</li><li>• <b>Toll Plaza Ramp Pavement</b> - Defined as the pavement on both the entrance and exit ramps of the Toll Road.</li><li>• <b>Travel Plaza Parking Lot Pavement</b> - Defined as the entire pavement associated with the Travel Plaza primarily the parking lot but also the entrance and exit ramps for the Travel Plazas.</li></ul>
<b>Justification:</b>	<p>Since 1998, the Indiana Department of Transportation (INDOT) uses the Pavement Quality Index (PQI) as the primary method to rate pavement conditions for monitoring purposes.</p> <p>The PQI rating is a calculated composite index of the following three measured factors and ranges:</p> <ul style="list-style-type: none"><li>• <b>Pavement Condition Rating (PCR)</b> - A measurement of the distresses on a pavement surface. The rating varies between 0 to 100 with excellent pavements in the 90 to 100 range, good pavements in the 80 to 90 range, fair pavements in the 70 to 80 range, and poor pavements below 70. The Toll Road District considers the system's pavement is deficient when the PCR is below 65 points. The pavement of the system is evaluated annually using the PCR.</li><li>• <b>International Roughness Index (IRI)</b> - A measurement of the ride of the pavement. It measures the "bumpiness" of the pavement in terms of inches per mile, the higher the number the rougher the ride. The index is set-up such that excellent pavements are in the 60 to 100</li></ul>

range, good pavements are in the 100 to 150 range, fair pavements are in the 150 to 200 range, and poor pavements are over 200.

- **Rut** – A measurement of the average depth of ruts in the wheel paths of a pavement. Rutting is most common on bituminous pavements and a severely rutted pavement would have average ruts of 0.25" or larger. Generally, rutting does not occur on concrete pavement unless it is very old (in the range of 25-plus years).

The PQI rating is from 0 to 100 with excellent pavements in the 90 to 100 range, good pavements in the 80 to 90 range, fair pavements in the 70 to 80 range, and poor pavements below 70.

The Toll Road District's goal for mainline pavement is an average PQI of 80 with no more than 10% of the pavement in the "poor" condition.

With regard to the Toll Plaza Pavement and the Travel Plaza Parking Lot Pavement, in lieu of measured PCR, IRI and RUT data, visual inspections were completed. (Without IRI and RUT, PQI ratings cannot be calculated.)

**Goals:**

With the above data, it was determine to establish the following OPI Measures:

OPI Pavement Goals			
Maintenance District	Mainline Pavement	Toll Plaza Ramp Pavement	Travel Plaza Parking Lot Pavement
	Percent of road miles with PQI $\geq$ 70	Percent ramp pavement in "good" range	Percent lot pavement in "good" range
1	90.00%	90.00%	90.00%
2	90.00%	90.00%	90.00%
3	90.00%	90.00%	90.00%
4	90.00%	90.00%	90.00%
ITR	90.00%	90.00%	90.00%

**Operation Performance Index Scale:**

Toll Road OPI Scale			
OPI Index	Mainline Pavement	Toll Plaza Ramp Pavement	Travel Plaza Parking Lot Pavement
	Percent of road miles with PQI $\geq 70$	Percent of ramp pavement in "good" range	Percent of Parking Lot pavement in "good" range
6	98.33% - 100.00%	98.33% - 100.00%	98.33% - 100.00%
5	96.65% - 98.32%	96.65% - 98.32%	96.65% - 98.32%
4	94.97% - 96.64%	94.97% - 96.64%	94.97% - 96.64%
3	93.29% - 94.96%	93.29% - 94.96%	93.29% - 94.96%
2	91.61% - 93.28%	91.61% - 93.28%	91.61% - 93.28%
1	90.00% - 91.6%	90.00% - 91.6%	90.00% - 91.6%
0	< 90.00	< 90.00	< 90.00

Maintenance District #1 - OPI Scale			
OPI Index	Mainline Pavement	Toll Plaza Ramp Pavement	Travel Plaza Parking Lot Pavement
	Percent of road miles with PQI $\geq$ 70	Percent of ramp pavement in "good" range	Percent of Parking Lot pavement in "good" range
6	98.33% - 100.00%	98.33% - 100.00%	98.33% - 100.00%
5	96.65% - 98.32%	96.65% - 98.32%	96.65% - 98.32%
4	94.97% - 96.64%	94.97% - 96.64%	94.97% - 96.64%
3	93.29% - 94.96%	93.29% - 94.96%	93.29% - 94.96%
2	91.61% - 93.28%	91.61% - 93.28%	91.61% - 93.28%
1	90.00% - 91.6%	90.00% - 91.6%	90.00% - 91.6%
0	< 90.00	< 90.00	< 90.00



Maintenance District #2 - OPI Scale			
OPI Index	Mainline Pavement	Toll Plaza Ramp Pavement	Travel Plaza Parking Lot Pavement
	Percent of road miles with PQI $\geq$ 70	Percent of ramp pavement in "good" range	Percent of Parking Lot pavement in "good" range
6	98.33% - 100.00%	98.33% - 100.00%	98.33% - 100.00%
5	96.65% - 98.32%	96.65% - 98.32%	96.65% - 98.32%
4	94.97% - 96.64%	94.97% - 96.64%	94.97% - 96.64%
3	93.29% - 94.96%	93.29% - 94.96%	93.29% - 94.96%
2	91.61% - 93.28%	91.61% - 93.28%	91.61% - 93.28%
1	90.00% - 91.6%	90.00% - 91.6%	90.00% - 91.6%
0	< 90.00	< 90.00	< 90.00

Maintenance District #3 - OPI Scale			
OPI Index	Mainline Pavement	Toll Plaza Ramp Pavement	Travel Plaza Parking Lot Pavement
	Percent of road miles with PQI $\geq$ 70	Percent of ramp pavement in "good" range	Percent of Parking Lot pavement in "good" range
6	98.33% - 100.00%	98.33% - 100.00%	98.33% - 100.00%
5	96.65% - 98.32%	96.65% - 98.32%	96.65% - 98.32%
4	94.97% - 96.64%	94.97% - 96.64%	94.97% - 96.64%
3	93.29% - 94.96%	93.29% - 94.96%	93.29% - 94.96%
2	91.61% - 93.28%	91.61% - 93.28%	91.61% - 93.28%
1	90.00% - 91.6%	90.00% - 91.6%	90.00% - 91.6%
0	< 90.00	< 90.00	< 90.00

Maintenance District #4 - OPI Scale			
OPI Index	Mainline Pavement	Toll Plaza Ramp Pavement	Travel Plaza Parking Lot Pavement
	Percent of road miles with PQI $\geq$ 70	Percent of ramp pavement in "good" range	Percent of Parking Lot pavement in "good" range
6	98.33% - 100.00%	98.33% - 100.00%	98.33% - 100.00%
5	96.65% - 98.32%	96.65% - 98.32%	96.65% - 98.32%
4	94.97% - 96.64%	94.97% - 96.64%	94.97% - 96.64%
3	93.29% - 94.96%	93.29% - 94.96%	93.29% - 94.96%
2	91.61% - 93.28%	91.61% - 93.28%	91.61% - 93.28%
1	90.00% - 91.6%	90.00% - 91.6%	90.00% - 91.6%
0	< 90.00	< 90.00	< 90.00

## OPI Measure

<b>Topic Name:</b>	System Condition
<b>Measure Name:</b>	Bridge Conditions
<b>Description:</b>	The Bridge Condition Measure tracks the Toll Road's ability to provide safe bridges and achieve overall bridge condition goals.
<b>Background:</b>	<p>The Toll Road District is responsible for the inspection and maintenance of approximately 331 bridges on the District's system.</p> <p>The Toll Road defines a bridge as any structure with a span of 20 feet or greater. INDOT's goal for its bridges is to provide a safe, smooth ride for the public and to provide bridges that meet the needs of Indiana's economy. The Toll Road has adopted a funds allocation philosophy designed to assure:</p> <ol style="list-style-type: none"><li>1. All bridges are safe for anticipated traffic loadings.</li><li>2. Ongoing maintenance maximizes the life of each structure.</li><li>3. Disparities between the Toll Road's average amount of deficiencies and each Maintenance District's average amount of deficiencies are eliminated.</li></ol> <p>Each bridge is evaluated biannually by trained inspectors to monitor and record its condition. The condition factors monitored include – but are not limited to – the following:</p> <ul style="list-style-type: none"><li>• <b>Bridge Wearing Surface</b> – Defined as the top concrete or HMA surface of the bridge that provides smooth ride ability for the vehicles and protections for the bridge deck. If this item is rated <math>\leq 5</math> it should be considered deficient. The deficiency should be measured in square foot of the deck area. (Currently, data on the Wearing Surface was not available.)</li><li>• <b>Paint</b> - The protective item for the superstructure (steel beams and girder) against rust and corruptions. If the paint is rated <math>\leq 5</math> it should be considered deficient. The deficiency is measured in percentage of bridges with a rating <math>\leq 5</math>.</li></ul>

- **Deck** - Represents one of the bridge's major components which transfer the live (vehicular) load to the beams and girders (superstructure). If the deck is rated  $\leq 5$ , it should be considered deficient. The deficiency is measured in percentage of bridges with a rating  $\leq 5$ .
- **Superstructure** - Represents the load carrying components of the bridge. If the item is rated  $\leq 4$  it should be considered deficient. The deficiency is measured in percentage of bridges with a rating  $\leq 4$ .
- **Substructure** - Defined as the support for beams, girders, deck, railings, and other features. If the item is rated  $\leq 4$  it should be considered deficient. The deficiency is measured in percentage of bridges with a rating  $\leq 4$ .

**Goal:** Each Maintenance District has a common goal for each of the five conditions. (i.e. Wearing Surface, Paint, Deck, Superstructure, and Substructure.)

Maintenance District	Wearing Surface Condition	Paint Condition	Deck Condition	Superstructure Condition	Substructure Condition
	percent > 5	percent > 5	percent > 5	percent > 4	percent > 4
1	96.00%	96.00%	96.00%	96.00%	96.00%
2	96.00%	96.00%	96.00%	96.00%	96.00%
3	96.00%	96.00%	96.00%	96.00%	96.00%
4	96.00%	96.00%	96.00%	96.00%	96.00%
ITR	96.00%	96.00%	96.00%	96.00%	96.00%

**Operation Performance Index Scale:**

Toll Road OPI Scale					
OPI Index	Wearing Surface	Paint Condition	Deck Condition	Superstructure Condition	Substructure Condition
6	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%
5	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%
4	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%
3	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%
2	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%
1	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%
0	< 96.00	< 96.00	< 96.00	< 96.00	< 96.00

Maintenance District #1 - OPI Scale					
OPI Index	Wearing Surface	Paint Condition	Deck Condition	Superstructure Condition	Substructure Condition
6	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%
5	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%
4	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%
3	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%
2	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%
1	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%
0	< 96.00	< 96.00	< 96.00	< 96.00	< 96.00

Maintenance District #2 - OPI Scale					
OPI Index	Wearing Surface	Paint Condition	Deck Condition	Superstructure Condition	Substructure Condition
6	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%
5	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%
4	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%
3	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%
2	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%
1	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%
0	< 96.00	< 96.00	< 96.00	< 96.00	< 96.00



Maintenance District #3 - OPI Scale					
OPI Index	Wearing Surface	Paint Condition	Deck Condition	Superstructure Condition	Substructure Condition
6	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%
5	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%
4	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%
3	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%
2	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%
1	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%
0	< 96.00	< 96.00	< 96.00	< 96.00	< 96.00

Maintenance District #4 - OPI Scale					
OPI Index	Wearing Surface	Paint Condition	Deck Condition	Superstructure Condition	Substructure Condition
6	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%	99.35% - 100%
5	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%	98.68% - 99.34%
4	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%	98.01% - 98.67%
3	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%	97.34% - 98.00%
2	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%	96.67% - 97.33%
1	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%	96.00% - 96.66%
0	< 96.00	< 96.00	< 96.00	< 96.00	< 96.00

## OPI Measure

<b>Topic Name:</b>	Maintenance Index
<b>Measure Name:</b>	Sign
<b>Description:</b>	The Sign Measure tracks the Toll Road's ability to provide safe signage and achieve overall signage condition goals.
<b>Background:</b>	<p>The Toll Road District is responsible for the inspection and maintenance of signs and posts on the District's system.</p> <p>Each observed sign deficiency per mile is recorded. Deficiencies include – by are not necessarily limited to – the following:</p> <ul style="list-style-type: none"><li>• <b>A sign message that cannot be clearly read due to a twisted or leaning post or post system.</b></li><li>• <b>A sign message that cannot be clearly read due to the sign sheeting being twisted or bent.</b></li><li>• <b>A sign message that is significantly faded or has a 25% or more of the sign message missing.</b></li></ul>
<b>Measurement:</b>	Deficiency ratings are calculated by dividing the number of deficiencies by the number of lane miles surveyed. In the case of Toll Plaza Ramps and Travel Plaza Parking Lots, the deficiency ratings are calculated by dividing the number of deficiencies by the number of ramps or parking lots surveyed.
<b>Goal:</b>	The Toll Road's Signage goal is to achieve an OPI score of 4 or greater.

Toll Road OPI Scale			
OPI Index	Mainline Pavement Signage	Toll Plaza Ramp Signage	Travel Plaza Parking Lot Signage
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0300	0.0000 - 0.2381	0.0000 - 0.1429
5	0.0301 - 0.0600	0.2382 - 0.4762	0.1430 - 0.2143
4	0.0601 - 0.1000	0.4763 - 0.7143	0.2144 - 0.2857
3	0.1001 - 0.1300	0.7144 - 0.9524	0.2858 - 0.3571
2	0.1301 - 0.1600	0.9525 - 1.1905	0.3572 - 0.4286
1	0.1600 - 0.1800	1.1905 - 1.4286	0.4287 - 0.5000
0	> 0.1801	> 1.4286	> 0.5001

M-1 District - OPI Scale			
OPI Index	Mainline Pavement Signage	Toll Plaza Ramp Signage	Travel Plaza Parking Lot Signage
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0300	0.0000 - 0.2105	0.0000 - 0.2500
5	0.0301 - 0.0600	0.2106 - 0.4737	0.2501 - 0.5000
4	0.0601 - 0.1000	0.4738 - 0.7368	0.5001 - 0.7500
3	0.1001 - 0.1300	0.7369 - 0.9474	0.7501 - 1.0000
2	0.1301 - 0.1600	0.9475 - 1.2105	1.0001 - 1.2500
1	0.1600 - 0.1800	1.2106 - 1.4211	1.2501 - 1.5000
0	> 0.1801	> 1.4211	> 1.5000

M-2 District - OPI Scale			
OPI Index	Mainline Pavement Signage	Toll Plaza Ramp Signage	Travel Plaza Parking Lot Signage
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0300	0.0000 - 0.3333	0.0000 - 0.5000
5	0.0301 - 0.0600	0.3334 - 0.6667	0.5003 - 1.0000
4	0.0601 - 0.1000	0.6668 - 1.0000	1.0003 - 1.5000
3	0.1001 - 0.1300	1.0001 - 1.3333	1.5003 - 2.0000
2	0.1301 - 0.1600	1.3334 - 1.6667	2.0003 - 2.5000
1	0.1600 - 0.1800	1.6668 - 2.0000	2.5003 - 3.0000
0	> 0.1801	> 2.0000	> 3.0000

M-3 District - OPI Scale			
OPI Index	Mainline Pavement Signage	Toll Plaza Ramp Signage	Travel Plaza Parking Lot Signage
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0300	0.0000 - 0.2500	0.0000 - 0.2500
5	0.0301 - 0.0600	0.2501 - 0.5000	0.2501 - 0.5000
4	0.0601 - 0.1000	0.5001 - 0.7500	0.5001 - 0.7500
3	0.1001 - 0.1300	0.7501 - 1.0000	0.7501 - 1.0000
2	0.1301 - 0.1600	1.0001 - 1.2500	1.0001 - 1.2500
1	0.1600 - 0.1800	1.2501 - 1.5000	1.2501 - 1.5000
0	> 0.1801	> 1.5000	> 1.5000

M-4 District - OPI Scale			
OPI Index	Mainline Pavement Signage	Toll Plaza Ramp Signage	Travel Plaza Parking Lot Signage
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0300	0.0000 - 0.4000	0.0000 - 0.2500
5	0.0301 - 0.0600	0.4001 - 0.8000	0.2501 - 0.5000
4	0.0601 - 0.1000	0.8001 - 1.2000	0.5001 - 0.7500
3	0.1001 - 0.1300	1.2001 - 1.6000	0.7501 - 1.0000
2	0.1301 - 0.1600	1.6001 - 2.0000	1.0001 - 1.2500
1	0.1600 - 0.1800	2.0001 - 2.4000	1.2501 - 1.5000
0	> 0.1801	> 2.4000	> 1.5000

## OPI Measure

<b>Topic Name:</b>	Maintenance Index
<b>Measure Name:</b>	Pavement Marking
<b>Description:</b>	The Pavement Marking Measure tracks the Toll Road's ability to provide acceptable pavement markings and achieve overall condition goals.
<b>Background:</b>	<p>The Toll Road District is responsible for the inspection and maintenance of the pavement markings on the District's system.</p> <p>Each observed pavement marking deficiency per mile is recorded. Deficiencies include – by are not necessarily limited to – the following:</p> <ul style="list-style-type: none"><li>• <b>A significantly faded, missing, or covered, pavement edge line in excess of 150 linear feet.</b></li><li>• <b>A significantly faded, missing, or covered, center line or both in excess of 150 linear feet.</b></li><li>• <b>A significantly faded, missing, or covered, pavement line or center line or both in excess of 150 linear feet.</b></li><li>• <b>A stop bar with 25% or more significantly faded, missing, or covered.</b></li><li>• <b>A lane arrow with 25% or more significantly faded, missing, or covered.</b></li></ul>
<b>Measurement:</b>	Deficiency ratings are calculated by dividing the number of deficiencies by the number of lane miles surveyed. In the case of Toll Plaza Ramps and Travel Plaza Parking Lots, the deficiency ratings are calculated by dividing the number of deficiencies by the number of ramps or parking lots surveyed.
<b>Goal:</b>	The Toll Road's Pavement Marking goal is to achieve an OPI score of 4 or greater.

Toll Road OPI Scale			
OPI Index	Mainline Pavement Pavement Marking	Toll Plaza Ramp Pavement Marking	Travel Plaza Parking Lot Pavement Marking
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0601	0.0000 - 0.2381	0.0000 - 0.1429
5	0.0601 - 0.1501	0.2382 - 0.4762	0.1430 - 0.2143
4	0.1501 - 0.2401	0.4763 - 0.7143	0.2144 - 0.2857
3	0.2401 - 0.3201	0.7144 - 0.9524	0.2858 - 0.3571
2	0.3201 - 0.4001	0.9525 - 1.1905	0.3572 - 0.4286
1	0.4001 - 0.4801	1.1905 - 1.4286	0.4287 - 0.5000
0	> 0.4802	> 1.4287	> 0.5001



M-1 District - OPI Scale			
OPI Index	Mainline Pavement Pavement Marking	Toll Plaza Ramp Pavement Marking	Travel Plaza Parking Lot Pavement Marking
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0601	0.0000 - 0.2105	0.0000 - 0.2500
5	0.0601 - 0.1501	0.2106 - 0.4737	0.2501 - 0.5000
4	0.1501 - 0.2401	0.4738 - 0.7368	0.5001 - 0.7500
3	0.2401 - 0.3201	0.7369 - 0.9474	0.7501 - 1.0000
2	0.3201 - 0.4001	0.9475 - 1.2105	1.0001 - 1.2500
1	0.4001 - 0.4801	1.2106 - 1.4211	1.2501 - 1.5000
0	> 0.4802	> 1.4211	> 1.5000

M-2 District - OPI Scale			
OPI Index	Mainline Pavement Pavement Marking	Toll Plaza Ramp Pavement Marking	Travel Plaza Parking Lot Pavement Marking
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0601	0.0000 - 0.3333	0.0000 - 0.5000
5	0.0601 - 0.1501	0.3334 - 0.6667	0.5003 - 1.0000
4	0.1501 - 0.2401	0.6668 - 1.0000	1.0003 - 1.5000
3	0.2401 - 0.3201	1.0001 - 1.3333	1.5003 - 2.0000
2	0.3201 - 0.4001	1.3334 - 1.6667	2.0003 - 2.5000
1	0.4001 - 0.4801	1.6668 - 2.0000	2.5003 - 3.0000
0	> 0.4802	> 2.0000	> 3.0000

M-3 District - OPI Scale			
OPI Index	Mainline Pavement Pavement Marking	Toll Plaza Ramp Pavement Marking	Travel Plaza Parking Lot Pavement Marking
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0601	0.0000 - 0.2500	0.0000 - 0.2500
5	0.0601 - 0.1501	0.2501 - 0.5000	0.2501 - 0.5000
4	0.1501 - 0.2401	0.5001 - 0.7500	0.5001 - 0.7500
3	0.2401 - 0.3201	0.7501 - 1.0000	0.7501 - 1.0000
2	0.3201 - 0.4001	1.0001 - 1.2500	1.0001 - 1.2500
1	0.4001 - 0.4801	1.2501 - 1.5000	1.2501 - 1.5000
0	> 0.4802	> 1.5000	> 1.5000

M-4 District - OPI Scale			
OPI Index	Mainline Pavement Pavement Marking	Toll Plaza Ramp Pavement Marking	Travel Plaza Parking Lot Pavement Marking
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0601	0.0000 - 0.4000	0.0000 - 0.2500
5	0.0601 - 0.1501	0.4001 - 0.8000	0.2501 - 0.5000
4	0.1501 - 0.2401	0.8001 - 1.2000	0.5001 - 0.7500
3	0.2401 - 0.3201	1.2001 - 1.6000	0.7501 - 1.0000
2	0.3201 - 0.4001	1.6001 - 2.0000	1.0001 - 1.2500
1	0.4001 - 0.4801	2.0001 - 2.4000	1.2501 - 1.5000
0	> 0.4802	> 2.4000	> 1.5000

## OPI Measure

<b>Topic Name:</b>	Maintenance Index
<b>Measure Name:</b>	Litter
<b>Description:</b>	The Litter Measure tracks the Toll Road's ability to provide a litter free roadway and achieve overall condition goals.
<b>Background:</b>	<p>The Toll Road District has established two deficiency categories for litter:</p> <ul style="list-style-type: none"><li>• <b>Countable Litter in excess of 10 items – Defined as an item equal to or greater than a pack of cigarettes, but less than 8 inches high and 3 feet by 3 feet in area.</b></li><li>• <b>Large Litter – Defined as follows:</b><ol style="list-style-type: none"><li>1. <b>An item that is 8 inches or greater in height and 3 feet by 3 feet or greater in area.</b></li><li>2. <b>Dead deer on the paved surface – including the paved shoulder.</b></li></ol></li></ul>
<b>Measurement:</b>	Deficiency ratings are calculated by dividing the number of deficiencies by the number of lane miles surveyed. In the case of Toll Plaza Ramps and Travel Plaza Parking Lots, the deficiency ratings are calculated by dividing the number of deficiencies by the number of ramps or parking lots surveyed.
<b>Goal:</b>	The Toll Road's Litter goal is to achieve an OPI score of 4 or greater.

Toll Road OPI Scale			
OPI Index	Mainline Pavement Litter	Toll Plaza Ramp Litter	Travel Plaza Parking Lot Litter
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 1.3500	0.0000 - 1.4286	0.0000 - 2.1429
5	1.3501 - 2.9500	1.4287 - 1.9048	2.1431 - 2.8571
4	2.9501 - 4.6500	1.9049 - 2.3810	2.8574 - 3.5714
3	4.6501 - 6.2000	2.3811 - 2.8571	3.5717 - 4.2857
2	6.2001 - 7.7500	2.8572 - 3.3333	4.2860 - 5.0000
1	7.7501 - 9.3000	3.3334 - 3.8095	5.0003 - 5.7143
0	> 9.3001	> 3.8096	> 5.7146

M-1 District - OPI Scale			
OPI Index	Mainline Pavement Litter	Toll Plaza Ramp Litter	Travel Plaza Parking Lot Litter
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 1.3500	0.0000 - 1.4211	0.0000 - 2.2500
5	1.3501 - 2.9500	1.4212 - 1.8947	2.2501 - 2.7500
4	2.9501 - 4.6500	1.8948 - 2.3684	2.7501 - 3.5000
3	4.6501 - 6.2000	2.3685 - 2.8421	3.5001 - 4.2500
2	6.2001 - 7.7500	2.8422 - 3.3158	4.2501 - 5.0000
1	7.7501 - 9.3000	3.3159 - 3.7895	5.0001 - 5.7500
0	> 9.3001	> 3.7895	> 5.7500

M-2 District - OPI Scale			
OPI Index	Mainline Pavement Litter	Toll Plaza Ramp Litter	Travel Plaza Parking Lot Litter
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 1.3500	0.0000 - 1.5000	0.0000 - 2.0000
5	1.3501 - 2.9500	1.5001 - 1.8333	1.0001 - 3.0000
4	2.9501 - 4.6500	1.8334 - 2.3333	2.0001 - 3.5000
3	4.6501 - 6.2000	2.3334 - 2.8333	3.0001 - 4.5000
2	6.2001 - 7.7500	2.8334 - 3.3333	4.0001 - 5.0000
1	7.7501 - 9.3000	3.3334 - 3.8333	5.0001 - 5.5000
0	> 9.3001	> 3.8333	> 5.5000

M-3 District - OPI Scale			
OPI Index	Mainline Pavement Litter	Toll Plaza Ramp Litter	Travel Plaza Parking Lot Litter
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 1.3500	0.0000 - 1.4167	0.0000 - 2.2500
5	1.3501 - 2.9500	1.4168 - 1.9167	2.2501 - 2.7500
4	2.9501 - 4.6500	1.9168 - 2.4167	2.7501 - 3.5000
3	4.6501 - 6.2000	2.4168 - 2.8333	3.5001 - 4.2500
2	6.2001 - 7.7500	2.8334 - 3.3333	4.2501 - 5.0000
1	7.7501 - 9.3000	3.3334 - 3.8333	5.0001 - 5.7500
0	> 9.3001	> 3.8333	> 5.7500

M-4 District - OPI Scale			
OPI Index	Mainline Pavement Litter	Toll Plaza Ramp Litter	Travel Plaza Parking Lot Litter
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 1.3500	0.0000 - 1.4000	0.0000 - 2.2500
5	1.3501 - 2.9500	1.4001 - 2.0000	2.2501 - 2.7500
4	2.9501 - 4.6500	2.0001 - 2.4000	2.7501 - 3.5000
3	4.6501 - 6.2000	2.4001 - 2.8000	3.5001 - 4.2500
2	6.2001 - 7.7500	2.8001 - 3.4000	4.2501 - 5.0000
1	7.7501 - 9.3000	3.4001 - 3.8000	5.0001 - 5.7500
0	> 9.3001	> 3.8000	> 5.7500

## OPI Measure

<b>Topic Name:</b>	Maintenance Index
<b>Measure Name:</b>	Drainage Obstruction
<b>Description:</b>	The Drainage Obstruction Measure tracks the Toll Road's ability to provide a properly drained roadway and achieve overall condition goals.
<b>Background:</b>	<p>The Toll Road District has defined a Drainage Obstruction as follows:</p> <ul style="list-style-type: none"><li>• <b>Solid material within the ditch exceeding 50% of the ditch cross-section.</b></li><li>• <b>A culvert with 50% or more of the culvert cross-section silted-in or plugged by solid material.</b></li><li>• <b>Standing water one inch in depth or greater covering 6 feet or more of the paved surface for 10 linear feet.</b></li><li>• <b>Standing water one inch in depth or greater covering the wheel track within a traveled lane for 10 linear feet.</b></li><li>• <b>Leafy vegetation dumped in the ditch obstructing 50% or more of the ditch cross-section in excess of 25 continuous feet.</b></li></ul>
<b>Measurement:</b>	Deficiency ratings are calculated by dividing the number of deficiencies by the number of lane miles surveyed. In the case of Toll Plaza Ramps and Travel Plaza Parking Lots, the deficiency ratings are calculated by dividing the number of deficiencies by the number of ramps or parking lots surveyed.
<b>Goal:</b>	The Toll Road's Drainage Obstruction goal is to achieve an OPI score of 4 or greater.

Toll Road OPI Scale			
OPI Index	Mainline Pavement Drainage Obstruction	Toll Plaza Ramp Drainage Obstruction	Travel Plaza Parking Lot Drainage Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0200	0.0000 - 0.0714	0.0000 - 0.1429
5	0.0201 - 0.0400	0.0715 - 0.1905	0.1430 - 0.2143
4	0.0401 - 0.0600	0.1906 - 0.3095	0.2144 - 0.2857
3	0.0601 - 0.0800	0.3096 - 0.4286	0.2858 - 0.3571
2	0.0801 - 0.1000	0.4287 - 0.5476	0.3572 - 0.4286
1	0.1001 - 0.1200	0.5477 - 0.6667	0.4287 - 0.5000
0	> 0.1201	> 0.6668	> 0.5001



M-1 District - OPI Scale			
OPI Index	Mainline Pavement Drainage Obstruction	Toll Plaza Ramp Drainage Obstruction	Travel Plaza Parking Lot Drainage Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0200	0.0000 - 0.1053	0.0000 - 0.2500
5	0.0201 - 0.0400	0.1054 - 0.2105	0.2501 - 0.5000
4	0.0401 - 0.0600	0.2106 - 0.3158	0.5001 - 0.7500
3	0.0601 - 0.0800	0.3159 - 0.4211	0.7501 - 1.0000
2	0.0801 - 0.1000	0.4212 - 0.5263	1.0001 - 1.2500
1	0.1001 - 0.1200	0.5264 - 0.6842	1.2501 - 1.5000
0	> 0.1201	> 0.6842	> 1.5000

M-2 District - OPI Scale			
OPI Index	Mainline Pavement Drainage Obstruction	Toll Plaza Ramp Drainage Obstruction	Travel Plaza Parking Lot Drainage Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0200	0.0000 - 0.1667	0.0000 - 0.5000
5	0.0201 - 0.0400	0.1668 - 0.3333	0.5003 - 1.0000
4	0.0401 - 0.0600	0.3334 - 0.5000	1.0003 - 1.5000
3	0.0601 - 0.0800	0.5001 - 0.6667	1.5003 - 2.0000
2	0.0801 - 0.1000	0.6668 - 0.8333	2.0003 - 2.5000
1	0.1001 - 0.1200	0.8334 - 1.0000	2.5003 - 3.0000
0	> 0.1201	> 1.0000	> 3.0000

M-3 District - OPI Scale			
OPI Index	Mainline Pavement Drainage Obstruction	Toll Plaza Ramp Drainage Obstruction	Travel Plaza Parking Lot Drainage Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0200	0.0000 - 0.0833	0.0000 - 0.2500
5	0.0201 - 0.0400	0.0834 - 0.1667	0.2501 - 0.5000
4	0.0401 - 0.0600	0.1668 - 0.3333	0.5001 - 0.7500
3	0.0601 - 0.0800	0.3334 - 0.4167	0.7501 - 1.0000
2	0.0801 - 0.1000	0.4168 - 0.5833	1.0001 - 1.2500
1	0.1001 - 0.1200	0.5834 - 0.6667	1.2501 - 1.5000
0	> 0.1201	> 0.6667	> 1.5000

M-4 District - OPI Scale			
OPI Index	Mainline Pavement Drainage Obstruction	Toll Plaza Ramp Drainage Obstruction	Travel Plaza Parking Lot Drainage Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0200	0.0000 - 0.2000	0.0000 - 0.2500
5	0.0201 - 0.0400	0.2002 - 0.4000	0.2501 - 0.5000
4	0.0401 - 0.0600	0.4001 - 0.6000	0.5001 - 0.7500
3	0.0601 - 0.0800	0.6001 - 0.8000	0.7501 - 1.0000
2	0.0801 - 0.1000	0.8001 - 1.0000	1.0001 - 1.2500
1	0.1001 - 0.1200	1.0001 - 1.2000	1.2501 - 1.5000
0	> 0.1201	> 1.2000	> 1.5000

## OPI Measure

<b>Topic Name:</b>	Maintenance Index
<b>Measure Name:</b>	Vegetation Obstruction
<b>Description:</b>	The Vegetation Obstruction Measure tracks the Toll Road's ability to provide appropriately maintained vegetation along the roadway and achieve overall condition goals.
<b>Background:</b>	<p>The Toll Road District has defined a Vegetation Obstruction as follows:</p> <ul style="list-style-type: none"><li>• <b>Vegetation obscuring signage.</b></li><li>• <b>Vegetation obscuring 25 continuous feet or more of guardrail.</b></li><li>• <b>Vegetation obscuring 12.5 continuous feet or more of guardrail end treatment.</b></li></ul>
<b>Measurement:</b>	Deficiency ratings are calculated by dividing the number of deficiencies by the number of lane miles surveyed. In the case of Toll Plaza Ramps and Travel Plaza Parking Lots, the deficiency ratings are calculated by dividing the number of deficiencies by the number of ramps or parking lots surveyed.
<b>Goal:</b>	The Toll Road's Vegetation Obstruction goal is to achieve an OPI score of 4 or greater.

Toll Road OPI Scale			
OPI Index	Mainline Pavement Vegetation Obstruction	Toll Plaza Ramp Vegetation Obstruction	Travel Plaza Parking Lot Vegetation Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0100	0.0000 - 0.0714	0.0000 - 0.1429
5	0.0101 - 0.0300	0.0715 - 0.1905	0.1430 - 0.2143
4	0.0301 - 0.0500	0.1906 - 0.3095	0.2144 - 0.2857
3	0.0501 - 0.0700	0.3096 - 0.4286	0.2858 - 0.3571
2	0.0701 - 0.0900	0.4287 - 0.5476	0.3572 - 0.4286
1	0.0901 - 0.1000	0.5477 - 0.6667	0.4287 - 0.5000
0	> 0.1001	> 0.6668	> 0.5001

M-1 District - OPI Scale			
OPI Index	Mainline Pavement Vegetation Obstruction	Toll Plaza Ramp Vegetation Obstruction	Travel Plaza Parking Lot Vegetation Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0100	0.0000 - 0.1053	0.0000 - 0.2500
5	0.0101 - 0.0300	0.1054 - 0.2105	0.2501 - 0.5000
4	0.0301 - 0.0500	0.2106 - 0.3158	0.5001 - 0.7500
3	0.0501 - 0.0700	0.3159 - 0.4211	0.7501 - 1.0000
2	0.0701 - 0.0900	0.4212 - 0.5263	1.0001 - 1.2500
1	0.0901 - 0.1000	0.5264 - 0.6842	1.2501 - 1.5000
0	> 0.1001	> 0.6842	> 1.5000

M-2 District - OPI Scale			
OPI Index	Mainline Pavement Vegetation Obstruction	Toll Plaza Ramp Vegetation Obstruction	Travel Plaza Parking Lot Vegetation Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0100	0.0000 - 0.1667	0.0000 - 0.5000
5	0.0101 - 0.0300	0.1668 - 0.3333	0.5003 - 1.0000
4	0.0301 - 0.0500	0.3334 - 0.5000	1.0003 - 1.5000
3	0.0501 - 0.0700	0.5001 - 0.6667	1.5003 - 2.0000
2	0.0701 - 0.0900	0.6668 - 0.8333	2.0003 - 2.5000
1	0.0901 - 0.1000	0.8334 - 1.0000	2.5003 - 3.0000
0	> 0.1001	> 1.0000	> 3.0000

M-3 District - OPI Scale			
OPI Index	Mainline Pavement Vegetation Obstruction	Toll Plaza Ramp Vegetation Obstruction	Travel Plaza Parking Lot Vegetation Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0100	0.0000 - 0.0833	0.0000 - 0.2500
5	0.0101 - 0.0300	0.0834 - 0.1667	0.2501 - 0.5000
4	0.0301 - 0.0500	0.1668 - 0.3333	0.5001 - 0.7500
3	0.0501 - 0.0700	0.3334 - 0.4167	0.7501 - 1.0000
2	0.0701 - 0.0900	0.4168 - 0.5833	1.0001 - 1.2500
1	0.0901 - 0.1000	0.5834 - 0.6667	1.2501 - 1.5000
0	> 0.1001	> 0.6667	> 1.5000

M-4 District - OPI Scale			
OPI Index	Mainline Pavement Vegetation Obstruction	Toll Plaza Ramp Vegetation Obstruction	Travel Plaza Parking Lot Vegetation Obstruction
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0100	0.0000 - 0.2000	0.0000 - 0.2500
5	0.0101 - 0.0300	0.2002 - 0.4000	0.2501 - 0.5000
4	0.0301 - 0.0500	0.4001 - 0.6000	0.5001 - 0.7500
3	0.0501 - 0.0700	0.6001 - 0.8000	0.7501 - 1.0000
2	0.0701 - 0.0900	0.8001 - 1.0000	1.0001 - 1.2500
1	0.0901 - 0.1000	1.0001 - 1.2000	1.2501 - 1.5000
0	> 0.1001	> 1.2000	> 1.5000

## OPI Measure

<b>Topic Name:</b>	Maintenance Index
<b>Measure Name:</b>	Guardrail
<b>Description:</b>	The Guardrail Measure tracks the Toll Road's ability to provide appropriately maintained vegetation along the roadway and achieve overall condition goals.
<b>Background:</b>	<p>The Toll Road District has defined a Guardrail Deficiency as follows:</p> <ul style="list-style-type: none"><li>• <b>A guardrail panel with 50% or more of its cross-section crushed or missing.</b></li><li>• <b>A guardrail panel with a vertical tear exceeding 50% of the panel cross-section.</b></li><li>• <b>Parapet rail section missing, 50% or more of its cross-section crushed or flattened, or with a vertical tear exceeding 50% of the rail cross-section.</b></li><li>• <b>Guardrail panel height outside the height range.</b></li></ul>
<b>Measurement:</b>	Deficiency ratings are calculated by dividing the number of deficiencies by the number of lane miles surveyed. In the case of Toll Plaza Ramps and Travel Plaza Parking Lots, the deficiency ratings are calculated by dividing the number of deficiencies by the number of ramps or parking lots surveyed.
<b>Goal:</b>	The Toll Road's Guardrail goal is to achieve an OPI score of 4 or greater.

Toll Road OPI Scale			
OPI Index	Mainline Pavement Guardrail	Toll Plaza Ramp Guardrail	Travel Plaza Parking Lot Guardrail
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.1190	0.0000 - 0.1429
5	0.0501 - 0.1300	0.1191 - 0.2381	0.1430 - 0.2143
4	0.1301 - 0.2100	0.2382 - 0.3571	0.2144 - 0.2857
3	0.2101 - 0.2800	0.3572 - 0.4762	0.2858 - 0.3571
2	0.2801 - 0.3500	0.4763 - 0.5952	0.3572 - 0.4286
1	0.3501 - 0.4200	0.5953 - 0.7143	0.4287 - 0.5000
0	> 0.4201	> 0.7144	> 0.5001



M-1 District - OPI Scale			
OPI Index	Mainline Pavement Guardrail	Toll Plaza Ramp Guardrail	Travel Plaza Parking Lot Guardrail
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.1053	0.0000 - 0.2500
5	0.0501 - 0.1300	0.1054 - 0.2632	0.2501 - 0.5000
4	0.1301 - 0.2100	0.2633 - 0.3684	0.5001 - 0.7500
3	0.2101 - 0.2800	0.3685 - 0.4737	0.7501 - 1.0000
2	0.2801 - 0.3500	0.4738 - 0.5789	1.0001 - 1.2500
1	0.3501 - 0.4200	0.5790 - 0.7368	1.2501 - 1.5000
0	> 0.4201	> 0.7368	> 1.5000

M-2 District - OPI Scale			
OPI Index	Mainline Pavement Guardrail	Toll Plaza Ramp Guardrail	Travel Plaza Parking Lot Guardrail
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.1667	0.0000 - 0.5000
5	0.0501 - 0.1300	0.8338 - 0.3333	0.5003 - 1.0000
4	0.1301 - 0.2100	1.6673 - 0.5000	1.0003 - 1.5000
3	0.2101 - 0.2800	2.5005 - 0.6667	1.5003 - 2.0000
2	0.2801 - 0.3500	3.3338 - 0.8333	2.0003 - 2.5000
1	0.3501 - 0.4200	4.1672 - 1.0000	2.5003 - 3.0000
0	> 0.4201	> 1.0000	> 3.0000

M-3 District - OPI Scale			
OPI Index	Mainline Pavement Guardrail	Toll Plaza Ramp Guardrail	Travel Plaza Parking Lot Guardrail
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.1667	0.0000 - 0.2500
5	0.0501 - 0.1300	0.4169 - 0.2500	0.2501 - 0.5000
4	0.1301 - 0.2100	0.8337 - 0.3333	0.5001 - 0.7500
3	0.2101 - 0.2800	1.2503 - 0.5000	0.7501 - 1.0000
2	0.2801 - 0.3500	1.6669 - 0.5833	1.0001 - 1.2500
1	0.3501 - 0.4200	2.0836 - 0.7500	1.2501 - 1.5000
0	> 0.4201	> 0.7500	> 1.5000

M-4 District - OPI Scale			
OPI Index	Mainline Pavement Guardrail	Toll Plaza Ramp Guardrail	Travel Plaza Parking Lot Guardrail
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.2000	0.0000 - 0.2500
5	0.0501 - 0.1300	1.0006 - 0.4000	0.2501 - 0.5000
4	0.1301 - 0.2100	2.0008 - 0.6000	0.5001 - 0.7500
3	0.2101 - 0.2800	3.0006 - 0.8000	0.7501 - 1.0000
2	0.2801 - 0.3500	4.0006 - 1.0000	1.0001 - 1.2500
1	0.3501 - 0.4200	5.0006 - 1.2000	1.2501 - 1.5000
0	> 0.4201	> 1.2000	> 1.5000

## OPI Measure

<b>Topic Name:</b>	Maintenance Index
<b>Measure Name:</b>	Pavement Deficiency
<b>Description:</b>	The Pavement Deficiency Measure tracks the Toll Road's ability to eliminate pavement deficiencies along the roadway and achieve overall condition goals.
<b>Background:</b>	<p>The Toll Road District has defined a Pavement Deficiency as follows:</p> <ul style="list-style-type: none"><li>• A pothole in the paved surface exceeding 2 inches in depth and 144 square inches in area with both area dimensions greater than 4 inches.</li><li>• Pavement rutting is defined as vertical deformations of the pavement surface within the wheel tracks exceeding 2 inches in depth and 100 linear feet in length.</li><li>• Pavement shoving is defined as vertical deformations of the pavement surface exceeding 2 inches in depth and 4 feet by 6 feet in area.</li><li>• Pavement blowup exceeding 2 inches in height and 6 feet in width.</li><li>• Pavement sag or slip exceeding 2 inches in depth, 1.5 linear feet in length, and 6 feet in width.</li><li>• Manhole or inlet exceeding 2 inches in depth or height and 144 square-inches in area.</li><li>• A drop-off from the pave surface exceeding 2 inches in depth and 15 feet in length along a paved shoulder less than 8 feet wide .</li><li>• A drop-off from the pave surface exceeding 2 inches in depth and 100 feet in length along a paved shoulder greater than 8 feet wide.</li></ul>
<b>Measurement:</b>	Deficiency ratings are calculated by dividing the number of deficiencies by the number of lane miles surveyed. In the case of Toll Plaza Ramps and Travel Plaza Parking Lots, the deficiency ratings are calculated by dividing the number of deficiencies by the number of ramps or parking lots surveyed.
<b>Goal:</b>	The Toll Road's Pavement Deficiency goal is to achieve an OPI score of 4 or greater.

Toll Road OPI Scale			
OPI Index	Mainline Pavement Pavement Deficiency	Toll Plaza Ramp Pavement Deficiency	Travel Plaza Parking Lot Pavement Deficiency
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.2000	0.0000 - 0.1190	0.0000 - 0.1429
5	0.2001 - 0.4200	0.1191 - 0.2381	0.1430 - 0.2143
4	0.4201 - 0.6500	0.2382 - 0.3571	0.2144 - 0.2857
3	0.6501 - 0.8600	0.3572 - 0.4762	0.2858 - 0.3571
2	0.8601 - 1.0700	0.4763 - 0.5952	0.3572 - 0.4286
1	1.0700 - 1.2800	0.5953 - 0.7143	0.4287 - 0.5000
0	> 1.2801	> 0.7144	> 0.5001

M-1 District - OPI Scale			
OPI Index	Mainline Pavement Pavement Deficiency	Toll Plaza Ramp Pavement Deficiency	Travel Plaza Parking Lot Pavement Deficiency
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.2000	0.0000 - 0.1053	0.0000 - 0.2500
5	0.2001 - 0.4200	0.1054 - 0.2632	0.2501 - 0.5000
4	0.4201 - 0.6500	0.2633 - 0.3684	0.5001 - 0.7500
3	0.6501 - 0.8600	0.3685 - 0.4737	0.7501 - 1.0000
2	0.8601 - 1.0700	0.4738 - 0.5789	1.0001 - 1.2500
1	1.0700 - 1.2800	0.5790 - 0.7368	1.2501 - 1.5000
0	> 1.2801	> 0.7368	> 1.5000

M-2 District - OPI Scale			
OPI Index	Mainline Pavement Pavement Deficiency	Toll Plaza Ramp Pavement Deficiency	Travel Plaza Parking Lot Pavement Deficiency
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.2000	0.0000 - 0.1667	0.0000 - 0.5000
5	0.2001 - 0.4200	0.8338 - 0.3333	0.5003 - 1.0000
4	0.4201 - 0.6500	1.6673 - 0.5000	1.0003 - 1.5000
3	0.6501 - 0.8600	2.5005 - 0.6667	1.5003 - 2.0000
2	0.8601 - 1.0700	3.3338 - 0.8333	2.0003 - 2.5000
1	1.0700 - 1.2800	4.1672 - 1.0000	2.5003 - 3.0000
0	> 1.2801	> 1.0000	> 3.0000

M-3 District - OPI Scale			
OPI Index	Mainline Pavement Pavement Deficiency	Toll Plaza Ramp Pavement Deficiency	Travel Plaza Parking Lot Pavement Deficiency
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.2000	0.0000 - 0.1667	0.0000 - 0.2500
5	0.2001 - 0.4200	0.4169 - 0.2500	0.2501 - 0.5000
4	0.4201 - 0.6500	0.8337 - 0.3333	0.5001 - 0.7500
3	0.6501 - 0.8600	1.2503 - 0.5000	0.7501 - 1.0000
2	0.8601 - 1.0700	1.6669 - 0.5833	1.0001 - 1.2500
1	1.0700 - 1.2800	2.0836 - 0.7500	1.2501 - 1.5000
0	> 1.2801	> 0.7500	> 1.5000

M-4 District - OPI Scale			
OPI Index	Mainline Pavement Pavement Deficiency	Toll Plaza Ramp Pavement Deficiency	Travel Plaza Parking Lot Pavement Deficiency
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.2000	0.0000 - 0.2000	0.0000 - 0.2500
5	0.2001 - 0.4200	1.0006 - 0.4000	0.2501 - 0.5000
4	0.4201 - 0.6500	2.0008 - 0.6000	0.5001 - 0.7500
3	0.6501 - 0.8600	3.0006 - 0.8000	0.7501 - 1.0000
2	0.8601 - 1.0700	4.0006 - 1.0000	1.0001 - 1.2500
1	1.0700 - 1.2800	5.0006 - 1.2000	1.2501 - 1.5000
0	> 1.2801	> 1.2000	> 1.5000

## OPI Measure

<b>Topic Name:</b>	Maintenance Index
<b>Measure Name:</b>	Fencing Deficiency
<b>Description:</b>	The Pavement Drop-Off Deficiency Measure tracks the Toll Road's ability to eliminate fencing deficiencies along the roadway and achieve overall condition goals.
<b>Background:</b>	<p>The Toll Road District has defined a Fencing Deficiency as follows:</p> <ul style="list-style-type: none"><li>• <b>A fence section that is smashed or damaged so that it is no longer a physical deterrent to large animals or people.</b></li><li>• <b>A fence section that is leaning and / or twisted so that it is longer a physical deterrent to large animals or people.</b></li><li>• <b>Fence posts that are damaged or missing.</b></li></ul>
<b>Measurement:</b>	Deficiency ratings are calculated by dividing the number of deficiencies by the number of lane miles surveyed. In the case of Toll Plaza Ramps and Travel Plaza Parking Lots, the deficiency ratings are calculated by dividing the number of deficiencies by the number of ramps or parking lots surveyed.
<b>Goal:</b>	The Toll Road's Pavement Drop-Off Deficiency goal is to achieve an OPI score of 4 or greater.

Toll Road OPI Scale			
OPI Index	Mainline Pavement Fence	Toll Plaza Ramp Fence	Travel Plaza Parking Lot Fence
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.1190	0.0000 - 0.1429
5	0.0501 - 0.1300	0.1191 - 0.2381	0.1430 - 0.2143
4	0.1301 - 0.2100	0.2382 - 0.3571	0.2144 - 0.2857
3	0.2101 - 0.2800	0.3572 - 0.4762	0.2858 - 0.3571
2	0.2801 - 0.3500	0.4763 - 0.5952	0.3572 - 0.4286
1	0.3500 - 0.4200	0.5953 - 0.7143	0.4287 - 0.5000
0	> 0.4201	> 0.7144	> 0.5001



M-1 District - OPI Scale			
OPI Index	Mainline Pavement Fence	Toll Plaza Ramp Fence	Travel Plaza Parking Lot Fence
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.1053	0.0000 - 0.2500
5	0.0501 - 0.1300	0.1054 - 0.2632	0.2501 - 0.5000
4	0.1301 - 0.2100	0.2633 - 0.3684	0.5001 - 0.7500
3	0.2101 - 0.2800	0.3685 - 0.4737	0.7501 - 1.0000
2	0.2801 - 0.3500	0.4738 - 0.5789	1.0001 - 1.2500
1	0.3500 - 0.4200	0.5790 - 0.7368	1.2501 - 1.5000
0	> 0.4201	> 0.7368	> 1.5000

M-2 District - OPI Scale			
OPI Index	Mainline Pavement Fence	Toll Plaza Ramp Fence	Travel Plaza Parking Lot Fence
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.0526	0.0000 - 0.2500
5	0.0501 - 0.1300	0.2633 - 0.1053	0.2501 - 0.5000
4	0.1301 - 0.2100	0.5265 - 0.1579	0.5001 - 0.7500
3	0.2101 - 0.2800	0.7896 - 0.2105	0.7501 - 1.0000
2	0.2801 - 0.3500	1.0528 - 0.2632	1.0001 - 1.2500
1	0.3500 - 0.4200	1.3159 - 0.3158	1.2501 - 1.5000
0	> 0.4201	> 0.3158	> 1.5000

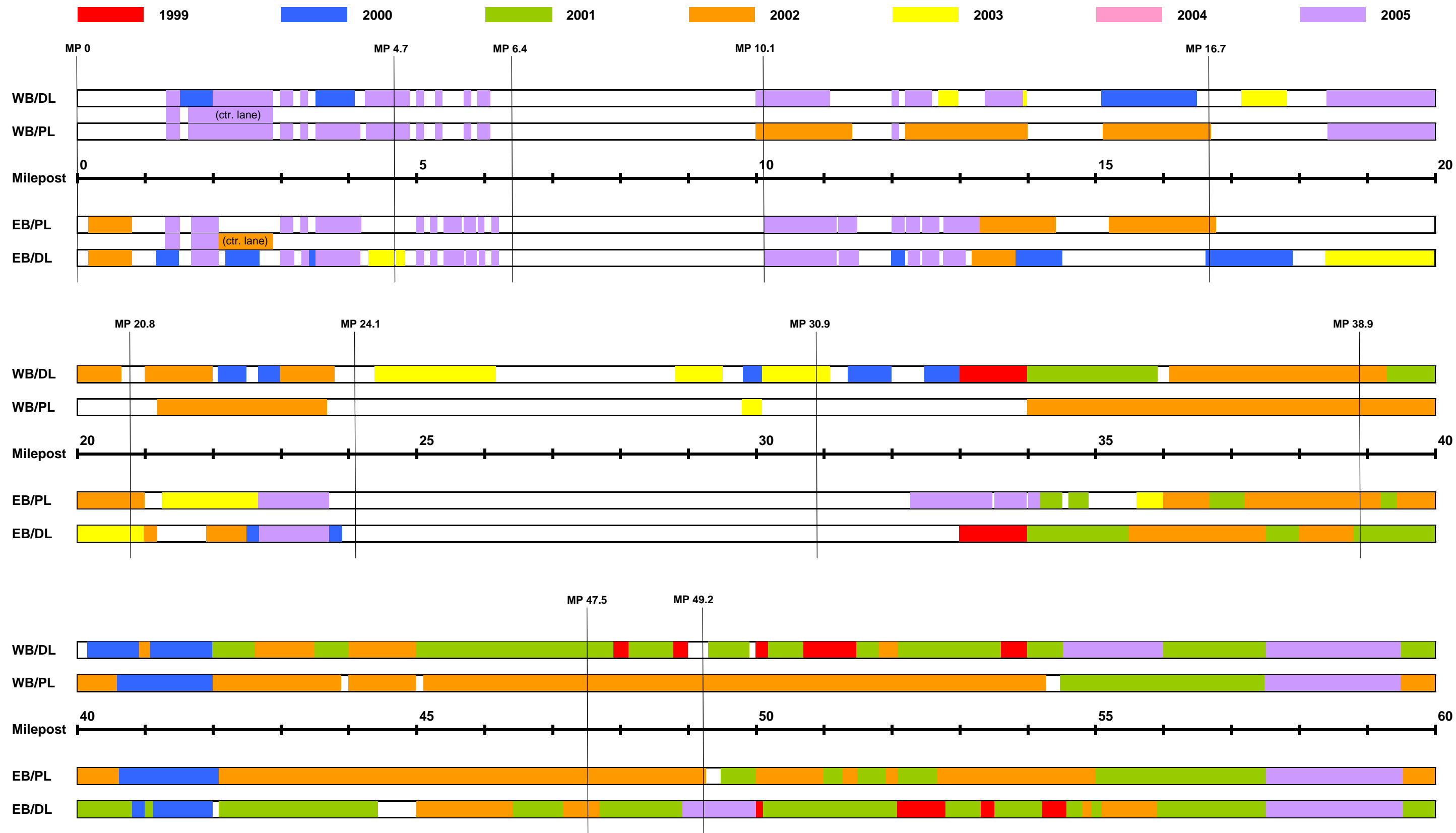
M-3 District - OPI Scale			
OPI Index	Mainline Pavement Fence	Toll Plaza Ramp Fence	Travel Plaza Parking Lot Fence
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.1053	0.0000 - 0.2500
5	0.0501 - 0.1300	0.2633 - 0.1579	0.2501 - 0.5000
4	0.1301 - 0.2100	0.5265 - 0.2105	0.5001 - 0.7500
3	0.2101 - 0.2800	0.7896 - 0.3158	0.7501 - 1.0000
2	0.2801 - 0.3500	1.0528 - 0.3684	1.0001 - 1.2500
1	0.3500 - 0.4200	1.3159 - 0.4737	1.2501 - 1.5000
0	> 0.4201	> 0.4737	> 1.5000

M-4 District - OPI Scale			
OPI Index	Mainline Pavement Fence	Toll Plaza Ramp Fence	Travel Plaza Parking Lot Fence
	Deficiency per Mile	Deficiency per Plaza	Deficiency per Plaza
6	0.0000 - 0.0500	0.0000 - 0.0526	0.0000 - 0.2500
5	0.0501 - 0.1300	0.2633 - 0.1053	0.2501 - 0.5000
4	0.1301 - 0.2100	0.5265 - 0.1579	0.5001 - 0.7500
3	0.2101 - 0.2800	0.7896 - 0.2105	0.7501 - 1.0000
2	0.2801 - 0.3500	1.0528 - 0.2632	1.0001 - 1.2500
1	0.3500 - 0.4200	1.3159 - 0.3158	1.2501 - 1.5000
0	> 0.4201	> 0.3158	> 1.5000

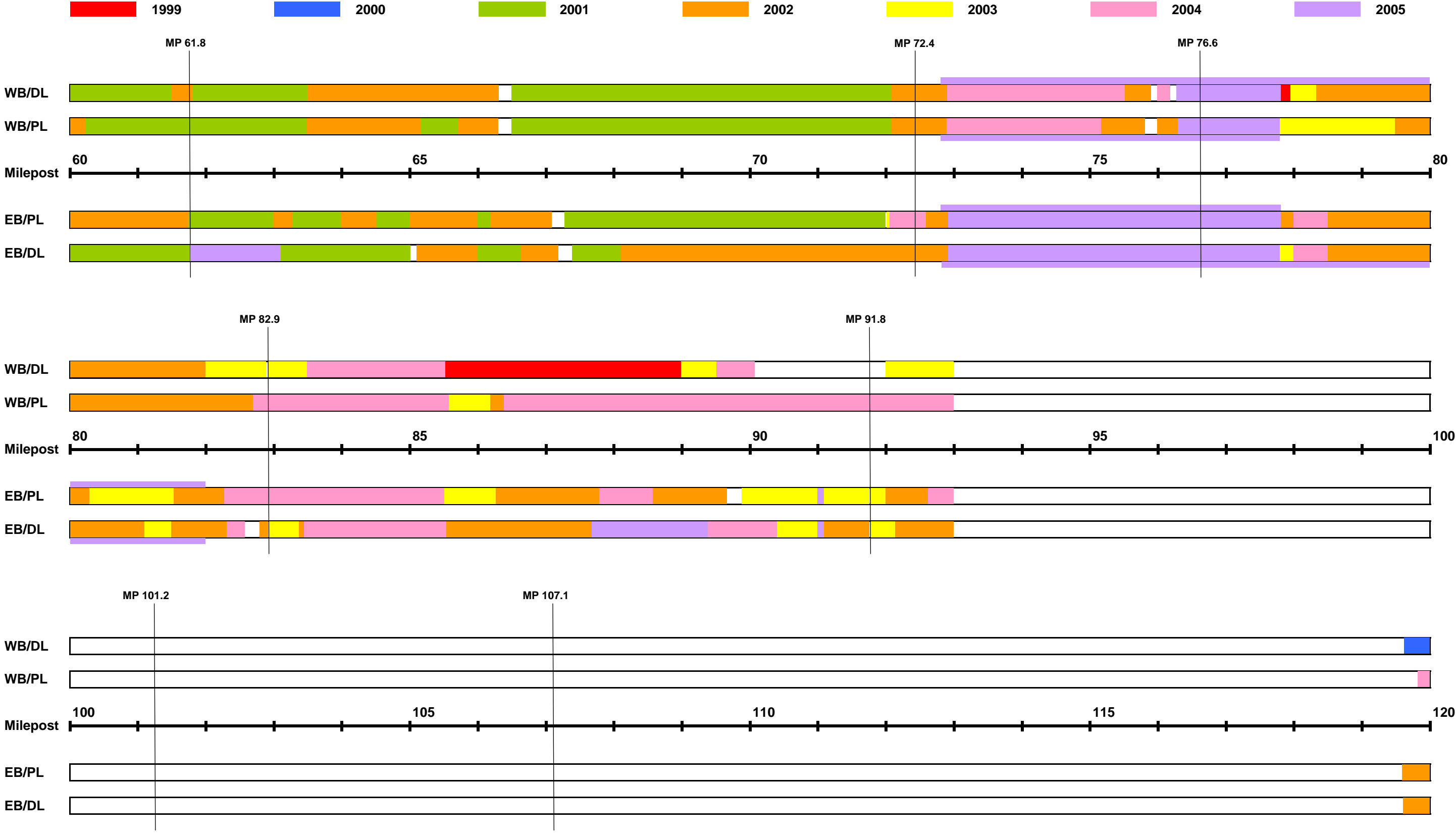
## APPENDIX B

### WEDGE & LEVEL HISTORY

WEDGE AND LEVEL HISTORY



WEDGE AND LEVEL HISTORY



WEDGE AND LEVEL HISTORY

